

# THE DENTAL DIGEST



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# THE DENTAL DIGEST

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## THE RETENTION OF FULL UPPER AND LOWER DENTURES\*

BY RUSSELL W. TENCH, D.D.S., NEW YORK, N. Y.

A majority of our profession look upon the problem of constructing full upper and lower dentures which will prove efficient, comfortable and satisfactory to their patients, as most vexatious. That this is so must be attributed largely to the fact that but few operators have a proper conception of the factors that govern the success or failure of their prosthetic efforts; many go about their work blindly, trusting largely to luck and the laboratory to rescue them from a bad situation, hoping that time and a kind Providence may come to the rescue by adapting the patient's mouth to their dentures, and knowing that after a time, becoming wearied, many patients will endure anything. Efficiency is often totally ignored. The easy way is followed and sometimes achieves an apparent successs.

It takes but very little more time in the aggregate to construct wonderfully efficient dentures that may be worn without soreness or discomfort to the patient immediately or within two weeks after the day they are adjusted to the mouth, than it takes to travel the usual road of hasty, imperfect methods, dissatisfaction, complaints and adjustments to the point where the patient is said to be satisfied or, more aptly, resigned to her fate.

The difference between dentures that satisfy and the other kind may all be summed up in the phrase, "knowledge skilfully applied." To possess knowledge requires patient, thoughtful study. To acquire any degree of skill requires that the operator be willing to practice, to try and to try again and again patiently and with the exercise of the faculties of self control and reason till the problem involved is mastered. It is useless to try to do a thing that cannot be done—to waste effort. But that which is being done by many can be done again by any one who has the will, desire, inspiration or whatever you may choose to call it, to keep everlastingly at a thing till he learns to do it.

I make these assertions because I know that a small proportion of the Dental Profession attempt to excuse themselves from performing the

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\*Presented at Ohio State Dental Society, December, 1918.

best service for their patients by saying that the patient will not pay for the highest type of denture service, that the time required to become reasonably proficient in the methods that are being advocated for the construction of the highest type of dentures is too great. They cannot afford it; why bless you the reason they cannot afford it is because they won't try it. For myself there is no satisfaction in trying to do anything but the best that is possible for any patient, and I cannot bring myself to sympathize with those who would adopt a quick method or an easy method which I know in my heart is not based on principles that will make it the ultimate, the best, when carried to completion. There can be no higher professional precept than to do unto others as you would that they should do unto you.

The factors that we must understand and know before any technic of impression taking can be brought to its greatest possibilities of perfection may be resolved into two groups, viz.: those that tend to displace dentures, and those that assist in retention. There are two groups of forces that may act on a denture, either singly or together. One group helps to hold the denture in place and the other group tends to force it from its seat on the ridge. When the forces that seek to unseat the denture are just balanced by the forces that tend to retain the denture the denture will "stay put." If we know what the displacing factors are and the limitations of these factors we may manoeuvre so that these forces may only act weakly on the denture or assist in retaining it. Then having a full knowledge of the retaining factors we may utilize them to the fullest and thereby render a truly professional service to our patient which cannot help but redound to our own benefit in lessening our worries and in making possible a more professional remuneration.

Preparatory to taking up the study of the retention and displacement factors just mentioned, let us consider that a denture consists of two parts, one which we will call the base and define as that portion of the upper denture that is in intimate contact with the alveolar ridge and hard palate and part of the soft palate, and that portion of the lower denture that covers the alveolar ridge. Superimposed on the base is the dental arch which is that portion of a denture that holds the teeth and attaches them to the base.

The pressure exerted by the atmosphere in which we live is the most important single factor with which we are concerned in a study of the problem of denture retention. The retention of our denture will be good or bad in direct ratio to our utilization of this important factor. The measure in which we are able to utilize atmospheric pressure is determined by the adaptation and extension of the base of the denture in question.

Extension, as we will consider it, deals with the area that the denture base covers. Maximum extension is required if maximum retention is to be obtained. The larger the area that a denture can be made to cover the greater the force the atmosphere can exert on it, hence the greater resistance it offers to displacing forces. A denture has reached the point of maximum extension when the peripheral portions of its base reaches to or in some cases very slightly beyond the point of attachment of muscle fibres that bound it.

It is important to realize that full extension is necessary. Just at the point of muscle attachment the oral tissues are usually somewhat soft and thick, and at this point they must be slightly compressed to form a valve that will yield to the movement of the denture without allowing air to penetrate under the base. If this rule is not followed the displacing factors will usually overbalance the retaining factors with sad results. Very few dentures are made to-day which measure up to this rule. Uppers are turned with a pencil or a file largely under the guidance of fancy. Lowers are made too short and too narrow.

A second point about maximum extension worthy of consideration is that the force of mastication is distributed over a large area and patients can employ full muscle tension when necessary to masticate hard or tough foods without discomfort.

A denture base that is intimately adapted displaces air, the weight of which exerts pressure of about fifteen pounds on every square inch of base area. The denture is literally floated into contact with the mouth tissues by the weight of the air that it displaces. Let the adaptation of the denture at its periphery be slightly imperfect letting air leak into and fill the denture till it sinks in the air as a boat filled with water sinks in the water. Under such circumstances the denture if it is an upper will drop; if it is a lower it will bob around loosely in the mouth as the patient talks or eats. This illustration may seem a little academic and far fetched, but it will serve its purpose if I can convince you that it is the pressure of the atmosphere that retains dentures. No mention has been made of vacuum, which I have intentionally ignored, because dentures can be made to resist displacement to a greater degree without so called vacuum chambers or suction devices than is ever possible with them; also because when you use the term suction, meaning the creation of a vacuum more or less complete, you are simply saying in another way the pressure of the atmosphere. To understand the foregoing statement is to divest the problem of retention of some of the mystery that has for a long time surrounded it. When a vacuum chamber or a relief is made in a denture a certain amount of air is retained under the denture, and air being slightly compressed as the denture is seated exerts its expansive pressure

and has a tendency to balance the external atmospheric pressure and decreases the amount of force required to displace the denture in mastication. I do not mean here to imply that a relief is not a good thing; it is necessary, but so called suction chambers are much less potent in retention than extension and adaptation. Relief is often necessary to secure adaptation. Perfect adaptation of a base, no matter of what material it is made, is largely a matter of accident if it is attained. That this is so is largely due to expansions and contractions of the metals used in constructing metal bases and to the same phenomena in rubber or combination rubber and metal, or metal and porcelain dentures. The imperfection of materials of which denture bases may be constructed makes it very important that we use the greatest care in all stages of denture work; that we pay every attention to securing accuracy in every detail of our work to the highest degree possible.

Minute imperfections in adaptation are overcome to a great degree by saliva and the action of capillary attraction and adhesion which hold it interposed between the denture and the mucosa, in which position it acts as a seal to keep air from penetrating under the denture. Some of us, when we have been a little too careless in our technic, have errors which even saliva will not save us from, and we resort to a thicker medium for this purpose which has to be sifted on to the denture from a can, but which lacks the advantage that saliva possesses of being replenished automatically.

The quality of adaptation and the selection of an impression material with which to obtain the best adaptation depends very largely on the condition of the mucosa covering the ridges.

Opposed to the force of atmospheric pressure and the correlated factors that make possible the maximum degree of retention are certain other factors arising from the force of muscular contraction. These factors may be grouped and called Displacement factors. Their action is largely opposed to retention, and a successful denture must utilize enough of the possibilities of the retention group to offset all possible strain imposed by the displacement group; and at the same time the forces that may cause displacement must, if possible, be prevented from acting to displace the denture or be used to aid in its retention. Leverage enters largely into the consideration of this phase, and where its action is unavoidable it should be allowed to act on the upper rather than the lower denture. In all instances leverage must be reduced to the minimum permitted by esthetics, if the greatest permanence of results is expected.

The contractile force of muscle tissue acts on the periphery of the base of both the upper and lower dentures and through the dental arch.

If the base of the denture is permitted to extend beyond the point of

muscle attachment to the palatal or bucco-labial borders of the upper denture a strain is created which may be sufficient to displace it. If this result is not apparent in a few days it may develop in a month or two. If the denture is retained in spite of this error soreness will result and trimming is made necessary.

To avoid displacing muscle strain and soreness the upper denture should end posteriorly at the point where the soft tissue flexes when the patient says "Ah." When the tissue covering the mouth is thick and soft or when the anterior ridge is flabby the upper denture may safely terminate anywhere up to one-eighth of an inch posterior to this point of flexion.

The lower denture rests on a moving support, and the resulting muscle pressures are much more potent in displacing it if they are not avoided. On the lingual side of the lower ridge the periphery of the lower base should rest snugly against the tissues at or about one millimeter below the mylohyoid ridge. Impressions will invariably extend from one-eighth to a half inch below this point and must be trimmed to the proper outline to secure the best suction. A properly taken impression will be perfectly trimmed for the *frenum linguae*. The bucco-labial flanges will require to be trimmed to the point where a vertical pull on the muscle of the lip or cheek will not unseat the denture.

Muscle contractions act on the dental arches through the bolus of food during mastication, and when their force is magnified by leverage due to incorrect design of the arches the efficiency of the dentures is greatly impaired and often entirely destroyed. By setting the lower teeth directly over the lower ridge, and as close to the ridge as esthetics will permit, the stability of the lower denture is greatly increased. Taken buccal or labio-lingually the centre of any given lower tooth should be directly above the middle line of the lower ridge. When the lower teeth are placed in this manner the tongue is allowed ample room, and the buccal and labial muscles are prevented from exerting dislodging pressure on them in either speech or mastication. The objection may be raised here that upper teeth will be set an unnecessary distance outside of the ridge, due to the fact that the lower ridge is usually considerably larger than the upper. This is so, but the area of the upper affords greater possibilities for retention and the upper denture rests on an immovable supporting member which more than offsets any increased leverage caused by setting the upper teeth outside of the ridge when this is necessary.

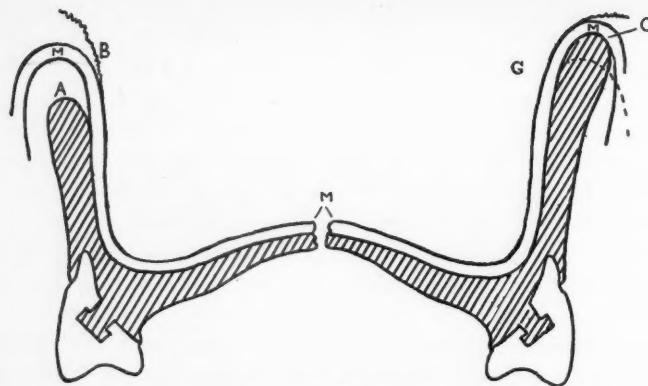


Fig. 1

This diagram shows a denture in which perfect adaptation to the mucosa has been obtained, but the right flange is under-extended, leaving a space "A" between the top of the flange and the mucosa "M," into which food may crowd. The tissues at the point of termination of this flange are very thin, and slight movement of the denture will cause this flange to part contact with the thin tissue and permit air to enter. The left flange is extended too high, and the muscle tissue underlying the mucosa is displaced upward by it with the result that there is a constant strain on the denture tending to force it out of contact with the ridge. This may cause the denture to be unserviceable from the first, or it may produce a good staying denture at first, which becomes loose when worn for a time, if great soreness does not result as is usually the case.

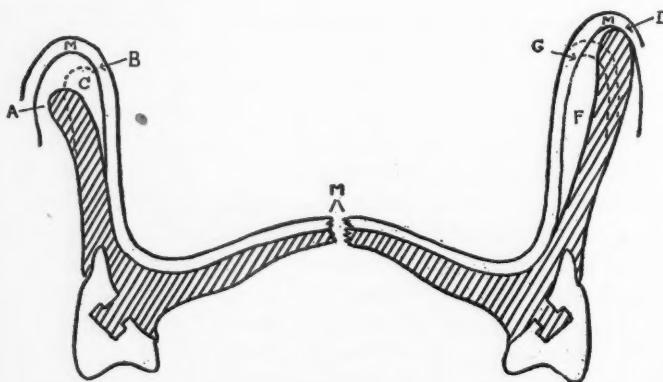


Fig. 2

This diagram shows the right buccal flange under-extended and out of adaptation with the ridge at the top. This condition usually follows the use of a large common tray, and a superabundance of impression material, which unite to stretch the fascia and muscle tissue out of normal position. A small bulk of material and a well-fitted tray would permit the denture flange "C" to fit closely against the ridge at "B."

The left buccal flange is shown over-extended and out of contact with the mucosa, leaving the space "F." If masticating pressure is exerted on the teeth on the right side of the mouth, the flange side of the denture will drop. Such a condition also permits air leaks to develop. This form of imperfection may develop where the fascia and fleshy tissues have their point of insertion close to the ridge, and follows either an attempt to get "suction" by tracing material on the flange or failure to confine the heat to the crest of the flange in muscle trimming.

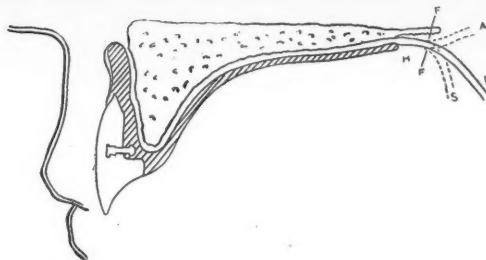


Fig. 3

This diagram illustrates under-extension of the heel of an upper denture which ends at the point "H" upon hard unyielding tissue. From "H" to the line "F F" there is a greater abundance of fleshy tissue under the mucosa than anterior to "H," and when the impression or denture is correctly adapted to this area a flexible valve is formed which allows movement of the denture without permitting air to penetrate under it.

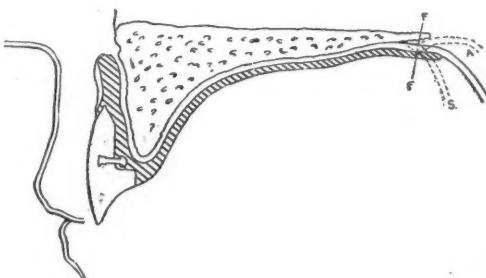


Fig. 4

This diagram shows a vertical section of an over-extended denture through the median line. The denture rests lightly against the mucosa at "F F" instead of compressing the soft fleshy tissue anterior to this line and between it and "H" as it should. This permits of only minimum retention by atmospheric pressure if slight movement occurs in mastication. The parallel solid lines "N" indicate the rest position of the mucosa of the underside of the soft palate. The dotted lines "A" show the relation of the mucosa to the over-extended heel of the denture; when the soft palate is deflected upward as in saying "Ah," a space is then formed between the denture and soft moving tissues, which permits air to be forced between the two and allows the denture to fall from its proper position.

The dotted lines "S" show the position of the mucosa and underlying muscular tissues when the act of swallowing is performed. When the heel of the denture extends this distance back on the soft palate of a normal mouth the denture may be displaced by swallowing action, or a very sore area will develop where the heel of the denture cuts into the tensed palatal tissues. Occasionally when the presence of much soft tissue in anterior portions of the vault indicates, the heel of the denture is over-extended in order to secure a valve at the back that will not break when abnormal movement of the denture occurs in front of the mouth. Irritation does not develop as a result of over-extension when the anterior part of the mouth is soft, because in such cases the heel of the denture moves with the muscle tissue.

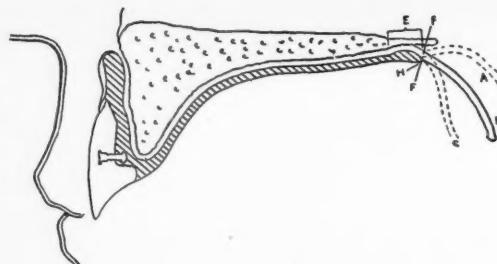


Fig. 5

This diagram shows the vertical section through a denture of proper length or extension as well as the relation of the soft and bony tissues to the denture. The line "F F" indicates the location at which the soft tissues of the mouth show movement when the patient swallows or says "Ah." Dentures should terminate at this point in most mouths if maximum comfortable retention is to be secured.

The bracket "E" shows the relative extent of the non-moving compressible fleshy tissues at the median line. It will be noticed from the upward thickness at the heel of the denture, that this tissue has been compressed in taking the impression. This permits considerable movement of the denture at this point without breaking contact of tissue with the denture and permitting air to enter.

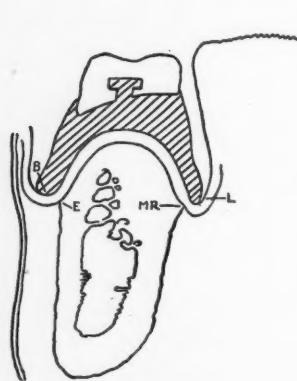


Fig. 6

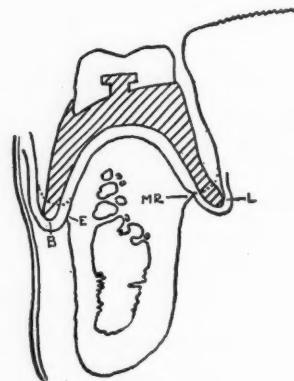


Fig. 7

Fig. 6 shows a vertical cross section of a properly extended lower denture and alveolar ridge in the molar region. The buccal flange "B" does not extend onto the muscle tissue at the external oblique line "E." The lingual flange "L" ends correctly at the horizontal level of the mylohyoid ridge "M R."

Fig. 7 shows the buccal flange of the lower denture "B" and the lingual flange "L" extended below the level of the external oblique line and mylohyoid ridge respectively. Over-extension of the buccal flange permits muscle tension to unseat the denture when the mouth is opened wide. Over extension at "L" permits displacing action of muscle tissue to occur. It also permits the sharp bony spine "M R" to cut into the mucoperiosteum when the flange "L" is forced toward "M R" in masticating. The lingual and buccal flanges should fit tightly against the tissue supported by the alveolar bony tissue to prevent food working up under the denture.

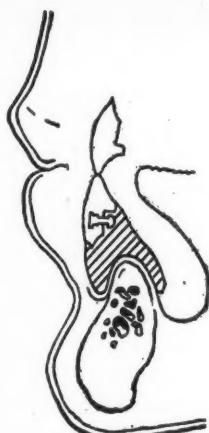


Fig. 8

Incisor Tooth Anterior to  
the Ridge



Fig. 9

Incisor Tooth Set Above  
the Lower Ridge

Fig. 8 shows a lower incisor in incorrect relation to the lower ridge. If the lower incisors, bicuspids and molars are set so that they are outside of the centre of the lower ridge, the displacing forces acting on the denture through the teeth, during mastication are aided by leverage and easily overbalance the retaining forces. The action of the displacing forces is magnified if the lower teeth are set too far above the ridge vertically. When lower teeth are set to the buccal or to the lingual of the centre of the lower ridge the buccal and lingual and labial groups of muscles exert pressure on the teeth during the acts of speech and mastication which tends to displace the denture.

Fig. 9 shows the correct relation of the lower incisor to the lower ridge. Maximum stability of lower dentures is attained when the lower teeth set so that the centre of each lower tooth is vertically above the centre of the base of the denture, when each tooth is set as close to the lower ridge as esthetics will permit. Leverage is thus reduced to a minimum and the tendency of muscular action to displace the denture laterally is also greatly minimized. The teeth are in a neutral position between the groups of muscles which may exert displacing force on them. Excellent results are obtained by adhering to this principle in all cases, not excepting those where prognathism or posterior malocclusion is in evidence. The upper teeth are set outside of the lower ridge where these conditions are met, without any ill effect, provided the base of the upper denture exhibits proper extension and adaptation.



## DO PORCELAIN CROWNS MEET THE REQUIREMENTS OF PRACTICE?

BY GEORGE WOOD CLAPP, D.D.S., NEW YORK

### THIRD PAPER

The previous articles have shown that the porcelain crowns now generally obtainable are conventional in form; that they harmonize with only a few forms of natural teeth; and that it is difficult for any dentist and impossible for most dentists to grind them to match many of the frequently seen natural tooth forms. This condition of affairs exists because no constructive contribution to the knowledge of tooth forms was made from the time of the Civil War to 1914; and because the present forms of crowns were produced by men who were not dentists and who founded their work upon inaccurate and incomplete knowledge which the dental profession supplied.

This article presents a summary of what may be learned by a study of the sizes and proportions of some of the conventional forms of crowns. It may enable dentists to select more readily among such crowns and utilize them to better advantage.

#### THE DIFFERENCE BETWEEN SIZE AND PROPORTION

It is important to keep in mind the difference in the meaning of these two terms. Size means the length of any diameter of a tooth, without reference to any other diameter. The diameters considered in this article are those of the labial surface, the length and width. All reference to neck diameters is postponed for another article. A crown may be long or short, without regard to its width, or wide or narrow without regard to its length.

The term proportion, as here used, deals with the width in relation to the length, or the length in relation to the width, that is, it includes both diameters, where size may include only one diameter. Thus a crown may be narrow or wide in proportion to its length, or short or long in proportion to its width. The proportion becomes very important in crown selection because a dentist may desire a larger or smaller size in the same proportions or a different width in proportion to a given length or a different length in proportion to a given width. (See Fig. 10.)

#### SIZES IN PORCELAIN CROWNS

The sizes in porcelain crowns are better suited to meet the requirements of practice than any other characteristic of the crowns. There are

crowns narrow enough and wide enough and crowns long enough and short enough, at least for all except the most extreme cases. While Dr. Black thought that natural upper centrals might be found narrower than 8 millimeters and wider than 10 millimeters, these are the extremes of width in the large number of teeth he measured. He found the lengths of crowns in natural upper centrals to range from 8 to 12 millimeters.

In the crowns, with which I am most familiar, and which I shall describe as representative of all conventional crowns, the upper centrals range by small gradations from 8 to 12 millimeters in width and from 8 to 13 millimeters in length. These dimensions agree almost exactly with Dr. Black's findings in natural teeth.

One of the serious troubles with the conventional sizes is that they are unrelated to one another. They are like a great band or orchestra in which there is a sufficient number of pieces but in which each instrument has been tuned without reference to any other instrument or to any common standard. There is no system in the sizes of conventional forms and the best efforts cannot make much of a system out of them. This condition is to be expected among many forms of crowns produced over a long period of time by unrelated workers.

#### PROPORTIONS IN CROWN FORMS

Perhaps the unscientific theories of tooth forms which were in vogue until 1914, led those who carved the patterns for the conventional crowns to attach less importance to the production of different sizes of the same proportions than the subject deserved. The temperamental theory made each man a law unto himself. It presented the climax of the development of the individual as a unit only slightly related to other units. It led the early designers to see individual sizes and proportions.

One might think that even under these conditions, it would occur to someone to produce graded sizes of the forms in existence, so that the dentist who found the form he liked might find it in large and small sizes. But for the lifetime of a generation crowns have been made and sold without even this improvement, and no steps were taken toward the production of graded sizes of a relatively few forms until Dr. Williams, in 1909, brought forward the proposal, accompanied by the data necessary for beginning the work.

#### WHAT THE PROFESSION HAS DONE UNDER THESE CONDITIONS

A violinist with an ingenious turn of mind recently gave a demonstration during which he played a series of pieces upon a violin having only

one string, the others having been removed. The achievement was creditable to his ingenuity and his industry but did not, of course, equal his performance when all the strings were present. A study of Figures 11 to 14 will show that while the profession has apparently been well supplied



Fig. 10

(A) is a diagram showing the diameters of a labial surface as they may be considered without relation to each other. This is the basis for "size" in crowns.

(B) shows the horizontal diameter or width compared with the length. This comparison is the basis for "proportion" in crowns.

with crown moulds, sizes and proportions, the unrelatedness of the sizes and the lack of graded sizes of a given form, have placed it in very much the same position as the violinist with only one string.

Figure 5, in the June issue, showed 11 moulds of crowns which are among the "best sellers" of the three leading crown manufacturers. The moulds, which in Figure 5, were given the numbers 7 to 11 inclusive, are reproduced in Figure 11 with their proper mould numbers. These moulds, which are here reproduced to exact size, are not the only popular

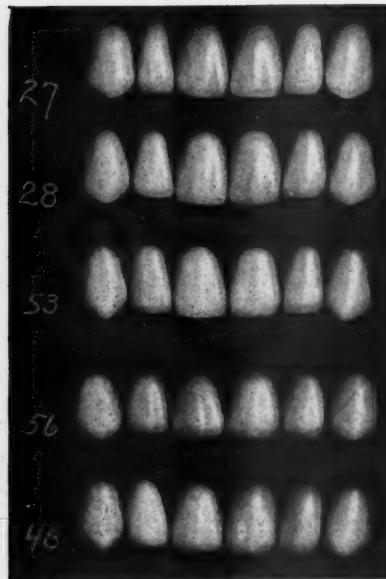


Fig. 11

Five of the "best sellers" among conventional crown moulds, taken from a very popular line of crowns. They appear at first glance to offer five forms and five sizes, in upper centrals, which would meet quite a range of requirements. Detailed study shows that they present only two slightly differing modifications of the tapering type, and that they differ far less than might be supposed in proportion and size. This will be made plainer by the subsequent illustrations.

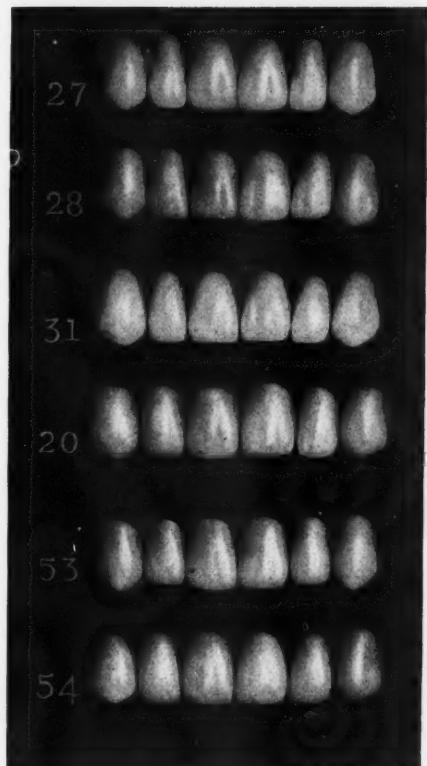


Fig. 12

This illustration shows the moulds in this line of crowns in which the upper centrals are of the same size for the same proportion as in mould 27. The centrals in moulds 27, 28, 31, 20 and 53 are identical in length and width, and with the exception of mould 20 very similar in form. The centrals in mould 54 are of the same proportion but of larger size. Fortunately, the value of these moulds is not limited to the centrals, since the laterals and cuspids differ in proportion and size.

53, and only one larger size in similar proportions, Mould 54.

If one selects Mould 56 (Fig. 11), he finds the centrals slightly wider in proportion to length than in Moulds 27, 28 and 53, though similar in outline form. If Mould 56 is too large, no smaller size in the same proportions is to be had. The other moulds from which he may choose are shown in Figure 13. In No. 43 the centrals are identical in length and width with those in Mould 56, but the laterals are different. Mould

moulds in this line of crowns, but they are sufficiently popular to answer for all other moulds for purposes of illustration.

It appears at first glance that these crowns offer dentists five distinct sizes from which to choose, but surprising things are learned when the sizes and proportions of these crowns are studied. In these moulds, which appear different to the casual glance, the centrals of Moulds 27, 28 and 53 are identical in width and length. For all practical purposes, these three moulds offer only one mould of centrals. The differences among the laterals and cuspids are much greater than among the centrals. This line of crowns offers another mould, 31, in which the upper centrals are of practically the same length and width, but in which the outline form is different.

The absence of related sizes is shown by the fact that in this line of crowns, the most extensive offered, there is no smaller size in the same proportions as the centrals in Moulds 27, 28 and

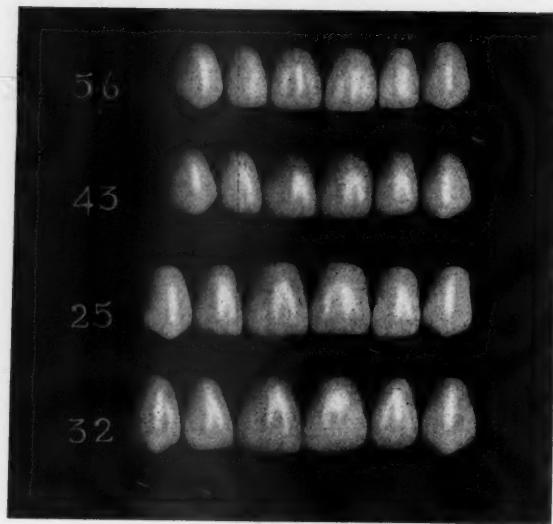


Fig. 13

The upper mould in this illustration is one of the five "best sellers." If one desires either other forms of the same size in centrals or other sizes of the same proportion, he will find mould 43 to present centrals practically identical with those in mould 56. Moulds 25 and 32 offer larger sizes in the same proportion but are of quite different form.

25 and Mould 32 present centrals of the same proportion as in Mould 56, but larger.

If Mould 48, the last of the best sellers here shown, were suitable except in size, no smaller size could be had, but Mould 8 would be found similar in outline and proportions, though larger.



Fig. 14

No smaller size in centrals in the same proportion as those in Mould 48 is obtainable, but Mould 8 is larger.

Here, then, are five of the most popular forms and sizes of a make of crowns used by dentists all over the world. No smaller sizes of centrals in any of the five are obtainable and only four larger sizes. In view of the numberless sizes and proportions of natural upper centrals, does it not seem that the dental profession is very much in the position of the violinist who played upon one string?

#### WHAT IS NEEDED IN PROPORTIONS

It is necessary that there be a classification of the proportions in natural teeth and the production of porcelain crowns in the proportions thus determined, that is, that the widths and lengths shall be right and rightly related.

The proportions of the various forms should be inter-related so as to provide forms from which one may obtain a greater width in a given length or a greater length in a given width, at least in crowns of certain forms.

The classification of natural tooth forms established by Dr. Williams lays the first scientific foundation for the determination of proportions. Five years of continuous experience with this classification has demonstrated its accuracy.

For instance, in the square type of teeth, Forms I, II, III and IV (known as the Long Square, the Medium Square, the Short Square and the Intermediate Square), offer four proportions of width to length, with only a slight difference of outline on the part of Form IV. When manufacturers produce crowns in these forms, it will be easy for the dentist who knows the required width to choose among four

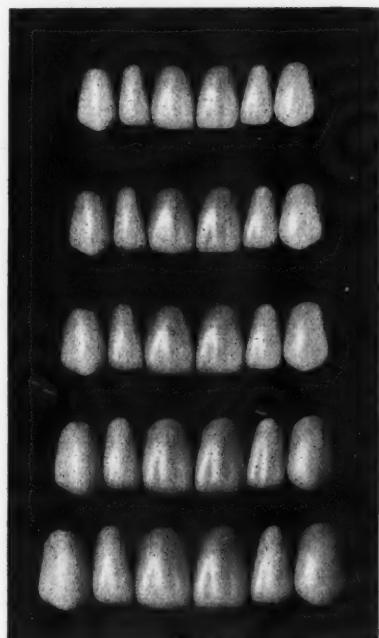


Fig. 15

This illustration shows what manufacturers might have done with great benefit to the profession. Mould 27, one of the "best sellers," has been photographically diminished and enlarged so that it is here presented in five sizes. The proportion necessarily remains constant to the sizes and enables the dentist to meet a wide range of size requirements. This idea never received serious attention until Dr. Williams presented and developed it.

graded lengths in that width. Such choice will be infinitely more rapid and satisfactory than any choice at present possible.

#### WHAT IS NEEDED IN SIZES

When the proportions of natural teeth to be produced in crowns have been determined, each proportion should be produced in graded sizes, from the smallest tooth likely to be encountered to the largest.

In the absence of such sizes in conventional crowns, larger and smaller sizes of Mould 27 have been made by photographic enlargement and reduction for illustration purposes only, and are shown as Figure 15. Such a range of sizes would go far to solve the dentist's problems.

#### THE SYSTEM OF NUMBERING

Owing to the fact that the conventional crowns have been produced by unrelated workers over a long period of time, there is no system of numbers which is related to forms or sizes.

The dentist in search of a crown has three courses open. The easiest is to leave the selection to a tooth clerk; this is a most unscientific procedure. The second is to confine himself to a few moulds until he knows them well; the fact that the bulk of sales by all crown manufacturers is in a comparatively small proportion of the moulds they produce, seems to show that many dentists do this. Or the dentist may, on each occasion, search through the line, either by the aid of measurements or without, until he finds a crown which can be made to do.

If manufacturers ever realize the advantages of classifying their crowns by form and size, and applying an intelligent series of numbers, they will greatly aid the profession.

The only intelligent plan is that the mould number shall indicate the type, the form and the size of the crown, so that dentists can tell from the number and without seeing a crown, just what the type, form and size of any crown will be; or if they know what type and form are desired, they may know among what numbers to search for the sizes of that form. Dr. Williams has perfected such a system.

This system employs three figures for each mould number. The first figure always indicates the type; number 1 as the first figure always indicates the square type; number 2 as the first figure indicates the tapering type; number 3 as the first figure indicates the ovoid type.

The second of the three figures always indicates the form in the type. Figure 2, following a 1, indicates form 2 of the square type; figure 3 following a 1 indicates form 3 of the square type; figure 4 following a 1

indicates form 4 of the square type. Figure 1 following a 2 indicates the first form of the tapering type; figure 5 following a 2 indicates the fifth form of the tapering type. Figure 1 following a 3 indicates the first form of the ovoid type; figure 2 following a 3 indicates the second form of the ovoid type.

The third figure of the mould number indicates the size of the form. Thus figure 1 might indicate the smallest size, figure 2 the second size, etc.

A few examples will make the advantages of such a system plain:

Mould number 151—square type, fifth form, smallest size.

Mould number 232—tapering type, third form, second size.

Mould number 243—tapering type, fourth form, third size.

Mould number 345—ovoid type, fourth form, fifth size.

The application of such a system of numbers is very simple when once mastered. Let us suppose that a dentist needs an upper central crown for a case where the other upper central is intact. The remaining natural central has nearly straight and nearly parallel approximal sides. This shows the dentist immediately that it is of the square type. As all the porcelain crowns of the square type would have the figure 1 as the first of the three figures of the mould number, the dentist knows immediately that a crown like the natural central would be found among the moulds whose number begins with the figure 1, and that all moulds whose number begins with the figure 2 or the figure 3 are contra-indicated.

If the dentist should select first for this case an upper central from mould 123 and find it of the correct width but too short, he would know that mould 113 would be longer in proportion to the width. If mould 123 proved to be of the right width but too long, mould 133 would be found shorter in proportion to its width and would require less grinding. In this way the dentist might rapidly and intelligently modify his selection.

On the other hand, if the remaining natural central were tapering he would seek his crown mould among those having figure 2 as the first figure in the mould number. If the natural central were ovoid he would seek the crown only among those having the figure 3 as the first figure in the mould number.

Such a system of numbering crown moulds would greatly facilitate selection of crowns, save an immense amount of time in the aggregate and would avoid much of the annoyance which is now so nearly constant.



## PARTIAL IMPRESSIONS AND THEIR RELATION TO DENTURE MAKING\*

BY SAMUEL G. SUPPLEE, NEW YORK, N. Y.

So much has been spoken and written concerning the impression technique for full upper and lower impressions, that the partial field has almost escaped attention.

The disclosures of the X-Ray seem to indicate the necessity for extracting so many teeth—particularly in the bicuspid and molar regions—that it makes it necessary to give more attention to partial restoration that will not cause the loss of the remaining sound teeth.

The old methods of clasp making have caused the loss of so many good teeth that many dentists have been so inclined to resort to the various kinds of attachments on the market, and apply them indiscriminately without regard to tissue conditions, that almost as many teeth have been lost through this means as with the old time clasp.

From the above statement, you may think I am going to introduce you to some new attachment that will solve all your problems.

On the contrary, I am going to try to establish the relation of the impression to the means of retention, and reintroduce you to some very old acquaintances in the form of clasps, as well as several newer attachments which I hope will be of value to you in placing Prosthetic Dentistry on a higher plane. Such wonderful strides have been made in prosthetics during the past few years that it would be impossible for one to cover the entire field, so I will devote the time allotted to me by bringing out, what I consider, some fundamental principles around which you can build your own technique, or adopt as much of what I suggest as you may desire.

An attachment or clasp that will be ideal for a *removable bridge* may do untold harm if used in connection with a *removable denture*.

To differentiate between the two, I have followed the suggestion of Dr. Roach of Chicago, and use the term "Removable Bridge" for all restorations between two or more abutments, wherein the abutments practically carry all the perpendicular and part of the lateral strain (where the saddle is too small to take all the occlusal strain).

By "removable denture" or "partial restoration," it is meant to include all kinds of partial plates including lingual bars, arch bars, etc., wherein the tissue carries practically all the perpendicular strain and some of the lateral strain. In taking impressions for removable

\*Read before the District of Columbia Dental Society, March 18th, 1919.

bridgework, any kind of material can be used that will reproduce stationary conditions, exactly as they exist. Hence plaster seems to be the best material for those who are not familiar with the manipulation of modeling compound.

In constructing *removable dentures* or partial restoration, we have to deal with comparatively stationary abutments and yielding tissues. Hence, we must recognize this in taking our impression, as well as in planning the denture, and use a material that can be controlled at will.

One of the first things to consider is the kind of appliance to be made before taking the impression, and this cannot be scientifically determined without examining the tissue conditions overlying the vault and ridges, for this is a vital factor in determining the kind of clasp or attachment to be employed.

It is a mistake to take an impression of most cases, and then proceed to make them up on the same casts without regard to diagnosis of tissue conditions.

This does not mean that we should not take a rough impression and bite, and make a cast from which to study conditions, but before even making a rough cast, you should use a chart on which to record the tissue conditions surrounding the vault and ridges, and make notes indicating the strength of the abutting teeth.

It is because of these varying conditions that I find it necessary to employ modeling compound, as the material best suited for taking impressions for both full and partial restorations. I find it of great value to compress or displace tissue under certain conditions, and have for a number of years employed a technique which to my way of thinking, is very simple and gives very gratifying results.

Much time is wasted in taking plaster impressions, and many dentures are spoiled by guess-filing when inserting finished dentures, particularly where the remaining teeth are bell-shaped and leaning at different angles.

A very simple technique will be demonstrated whereby the impression of the most difficult case can be taken easily and include only as much of the undercut or dovetail space as is possible to utilize in the finished denture.

This method of impression-taking will make it possible to eliminate clasps in many instances, and utilize the slight mobility of the teeth by being able to insert the finished denture without the use of file or scraper.

In determining the steps in the technique, it has seemed of vital importance that we secure an impression of the movable tissues in the exact position they will assume when in use. It naturally follows that "mouth closed and under natural pressure" would be most desirable.

The question of mouth closed or open is of minor importance in a partial upper impression if the denture is to be retained by clasps or attachments, but it is of very great importance in partial lower impressions where the bicuspids and molars are missing. This point will be taken up in detail in my clinic.

For convenience in discussing impression technique the writer has given careful study to tissue conditions as related to denture making, and divided them into four distinct classifications for either upper or lower. Several papers have been written on this subject, one of which was published in the *Dental Cosmos* of November, 1918. The writer will gladly mail a reprint of this to any one upon application.

#### PARTIAL IMPRESSIONS CLASSIFIED

For convenience in teaching, I have divided partials into two distinct types of cases. First, those that have comparatively straight-sided teeth and present no under cut spaces. Second, those presenting undercut and dovetailed spaces due to bellshaped teeth or irregular formation.

Each of these two types can be divided into three classes, which are indicated by the kind of dentures to be constructed:

- A. Those to be held in place by clasps, attachments or contact with teeth.
- B. Those retained by adhesion or so-called suction.
- C. Those retained by adhesion and attachments combined.

With the first class it is *not* essential that the impression be taken with the mouth closed, provided the plate will not cover the rear half of the vault.

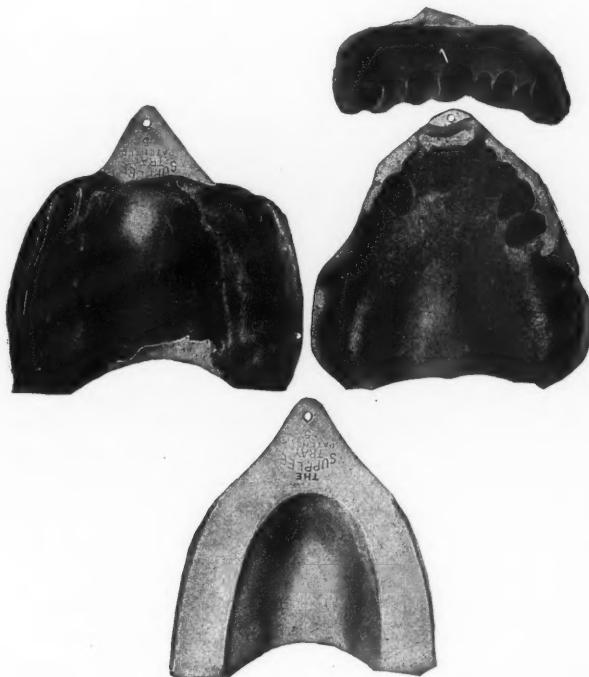
With Class B and Class C, it is very important that the impression be taken under pressure. In some instances, the advantage thus gained will be small when compared with the possibility of the patient being able to hold the base impression to place by closing on the back of the tray while correcting slight defects in the basic impression, or when you are laying on the *face piece* which completes the buccal and labial border. This will be demonstrated more fully.

#### BITING PRESSURE ESSENTIAL

In addition to the above classification, we might add a third class which would include all partial lowers where teeth are to be supplied in the bicuspid and molar region.

In this type of case the impression should be taken under biting stress whether the mouth is closed normally or held partly open.

The patient is requested to bite hard and swallow. This accomplishes two very important objects, viz: First, the act of biting causes the muscles to assume their working position and conforms the compound to the movable tissues affected by the masseter when in action. Second, the act of swallowing while the material is quite soft, causes the lingual attachment to shape the inner border of the impression to the required form of the proposed denture. This is a very important feature and will save hours of time in guess-filing a lower denture, or assist in determining where to place a lingual bar to the best advantage.



Showing a partial tray, the approximate formation of the compound for a partial upper impression, and the finished impression with the face piece laid back.

Note.—The material is formed to approximate the proposed impression and is mounded high in the median line well forward.

The object is to keep the material from covering the labial surfaces of the teeth and it will have to flow toward the rear thus compressing and displacing the tissue favorable to a denture.

## BASIC IMPRESSION AND FACE PIECE

The base impression includes the palatal or lingual surface and most of the area to be covered by the plate. By observing certain details in technique, we will take a correct impression of as much of the undercut space as will be possible to retain in the finished denture.

The face piece is laid on later to complete the impression of the buccal or labial surface of the standing teeth or gum, to guide in selecting or setting up the teeth.

This face piece is secured by placing the hardened base impression in position in the mouth and laying a small roll of softened compound over the buccal border of the exposed teeth or gums.

By taking impressions in two parts, we immediately place a great majority of our cases in the no undercut class, which is simple to handle, for a great majority of the undercuts exist bucco-lingually and do not interfere with the removal of the basic impression.

The material can be prepared and placed in the mouth so that the buccal or labial border of the teeth will be exposed and left till it sets stone hard, when it can be removed without danger of distortion or breaking. If a slight undercut exists, *the teeth are free to move sufficiently to permit the removal of the impression.* The face piece takes care of the apparently difficult part of the impression desired.

## DIAGNOSING THE CASE

The success in handling this method will be determined greatly by your skill in diagnosing your case, and planning how you are going to remove and replace the finished denture before taking your impression.

In partial work, the first thing important is to plan the type of denture which is going to be made for the patient in question, whether clasps or suction is to be used, and plan how the plate should be placed and removed and still take advantage of each undercut or dovetailed space possible.

You should observe these plans very carefully in taking your base impression and placing it back in position. In other words, the side having the *least* undercut should be removed *first*, and the side having the *most* undercut should be *placed back in position first.*

## ADJUSTING THE TRAY

Fit your tray regardless of the buccal or labial portion of the teeth or gums, excepting to see that it does not extend out into the cheek or tissue so as to distend them in any way.

Have the patient close on the tray, pressing hard enough to bend it so that it can be held firmly without pain due to the pressure of the tray on the tissues or strain on the teeth. If the upper teeth are missing in the molar and bicuspid region, the impression tray can be fitted to the vault so that it will just touch at the rear edge.

#### PREPARING THE MATERIAL

In placing the material into the tray, it must be formed to approximate the *proposed plate*, without any regard for the buccal or labial surface of the standing teeth, and of sufficient quantity to fill the space between the tray and ridges.



Showing the tray, preparation of material, and the finished impression for a partial lower.

See lingual border which has been formed by the act of swallowing while biting hard.

The compound should be warm throughout, but that portion next to the tray should be slightly cooler than the portion to come in contact with the tissue.

The preparation of the material is the most important part of the process, and should be very deliberate.

Cool the compound next to the tray by immersing the tray in cold water after the compound is placed on it and shaped to the approximate

formation. Then pass the surface that is to come in contact with the teeth and tissues over the flame to soften it to a flowing state; then dip this surface in the hot water pan before placing the compound in the mouth, and have the patient bite it to position. You have thus established three stratas of compound of different consistency and temperatures, which is very advantageous.

A small Bunsen burner with a flame about one inch in length and three millimeters in diameter should be conveniently placed, so that you may be able to readily pass it from the flame into the water.

The best results are secured by confining the compound that is in a flowing state inside of a casing of stiffer material that will serve to conform it to the tissue under slight pressure. Incidentally, this facilitates the cooling of the mass.

#### TAKING THE IMPRESSION

In taking the impression, you should place the tray and the material into the mouth in the same way as you propose to insert the finished denture, carrying the tray three-quarters of the way to position and then have the patient close and drive it the rest of the way. Caution the patient to hold the jaws firmly closed and give the lip and cheek movements; then continue to hold firmly while you lift the lips and *quickly force all material away from the buccal or labial side of standing teeth*, using the finger or an instrument.

After the excess is removed and the buccal and labial surfaces exposed, have the patient give the lip and cheek movement a second time and massage lightly; then let the compound set till it is stone hard, being very careful not to permit the patient to open until this is accomplished.

#### EXPOSE THE BUCCAL SURFACE OF THE TEETH

The tray is designed especially for this work, and is so formed that you can push the compound to the edge of the tray with the index finger, cutting the excess away in a scissor-like manner.

*If the teeth are not exposed so as to permit excess being readily removed, let the compound set until it is sufficiently hard that you can just dent it with the finger nail. Then it is very simple to use a lance or the small blade of a pen-knife, to cut the compound away before it becomes stone hard.*

#### REMOVING AND REPLACING THE IMPRESSION

Remove the impression from the mouth in the same way you propose to remove the finished denture. This will mean that the side having the

*least* undercut created by bell-shaped or irregular formation, is the side you remove first. To insert the impression into the mouth, the side you took out last should be inserted first.

You will be surprised to note that if you follow your diagnosis, you can permit the compound to set stone hard and yet be able to remove



Showing the way to fit partial upper tray.

The articulator represents the natural jaws and shows how the patient can hold the tray up to position by biting on the back of the tray.

The second articulator shows how the buccal and labial border should be exposed, in order that the basic impression can be removed without dragging or distortion.

The face piece is laid on after the basic impression has been cooled, removed, trimmed, and placed back into the mouth.

and replace the impression very readily, provided that the buccal and labial borders of the standing teeth are exposed.

This is due to the fact that the teeth are free to move in an outward direction sufficiently to overcome even a marked undercut.

#### CUT RIGHT ANGLES ADJACENT TO STANDING TEETH

Cut the impression at right angles adjacent to the standing teeth so as to readily permit the impression to pass out and in without interfering with bell-shape mesio distally.

If there are any deficiencies in the impression, in the area to be covered by the finished denture, they should be corrected. These corrections can be made by using the tracing stick or by adding new compound from the heater.

Caution must be exercised when trimming this right-angled surface to see that small particles do not drop into the imprints of the teeth; otherwise the base impression will not go back to place. A chip blower or a strong stream of water (cold) from syringe is absolutely essential.

#### FACE PIECE COMPLETES THE IMPRESSION

When the corrections in the base impression are complete, place the impression back in the mouth, have the patient close and lay a small roll of compound under the lip or cheek opposite the buccal or labial border of standing teeth; then draw the lip over it and press on the outside with the finger, or have the patient give the lip and cheek movement. This will conform the compound over the buccal and labial surface.

This face piece can be laid on in two or more sections by letting one overlap the other, and when they are thoroughly cold they will separate.

*Let this cool thoroughly.* When removing the impression, ignore this face piece by taking hold of the handle of the tray, or some part of the basic impression, and remove it in the same manner you would the finished denture.

In the majority of cases the face piece will remain in position or open up sufficiently to let the impression pass over the bell-shaped portion of the teeth.

As soon as you can take the face piece out of the mouth, it should be laid back to place on the impression, so that if slightly bent it can readily be pressed back to position. The pressure should be brought to bear directly over the right-angled points that were cut for the purpose of making a clean and definite joint.

If ice water is used, there will be no danger of it bending, as the compound will break clean before it will bend.

#### DESIRABLE CASTS

Casts made from these impressions will present the perfect contour of all standing teeth to guide in selecting or setting up teeth, and as much of the exact lingual formation possible to maintain and still insert the plate without filing or fitting.

The additional time expended in taking an impression of this kind will be offset by the time that otherwise would have been expended in putting together small pieces and adjustment of a denture made from a plaster impression.

The best cast materials for *partials* to our knowledge at the present time, are "Weinstein Artificial Stone" and "Alston Plaster."

One of the great advantages outside of their non-expanding qualities, lies in the fact that they are formulated from very finely ground materials and make a cast that, if broken, can be readily repaired.

It takes about four hours to set, but if properly manipulated will make a cast that is exceedingly smooth and hard.

P.S.—A practical demonstration of impression taking followed this paper and was accompanied with lantern slides illustrating various kinds of clasps and attachments showing their application to cases of different tissue classification.

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### CARING FOR THE NURSES

The Red Cross has not forgotten its nurses. Special hospitals have been established for taking care of nurses who are out of health. The American hospital at Neuilly is available to nurses overseas who are ill or wounded. Upon leaving this hospital they are sent to the Convalescent House for Red Cross workers at Cannes. Another feature in the care of worn-out nurses is the recent establishment by the Red Cross of "rest areas" for nurses in Belgium. Several "pensions" and hotels have been opened by the Red Cross for its personnel abroad, of which their nurses can take advantage. When the nurses return to America they are cared for in the Red Cross nurses' home or in the hospital nearest to their own homes.

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### A DENTAL "KNOCK-OUT"

We have recently heard an interesting story in connection with a dental surgeon of Paris. A well-dressed man once called upon him, representing that he wished to have a tooth extracted. The dentist was busy at the time, and requested the caller to wait in the waiting-room. He decided to make the most of his opportunity, for he began to stuff into his pockets all manner of things which he fancied. It was rather unfortunate for the thief, however, that the waiting-room door was not really closed. The dentist appeared and saw the thief in the act of stealing his goods. He withdrew, made as much noise as possible, and then, entering the room, invited the man to the dental chair. The dentist then administered a general anaesthetic, which soon sent his client to sleep. The police were summoned, and the thief was taken to the police-station.  
—*The Dental Surgeon.*

**CONNECTING LINKS FOR ACCURATELY AND EASILY ATTACHING MODELS TO THE GYSI ADAPTABLE ARTICULATOR**

By W. H. WESTON

**METHOD OF USE**

That prescribed by Professor Gysi up to the point of attaching models to articulator with soft plaster (bottom of page 24, pamphlet of directions, put out by Dentists' Supply Company).

At this point slip Connecting Links on over pencil points—raise upper half of articulator and drop the holes in Connecting Links over condyle posts.

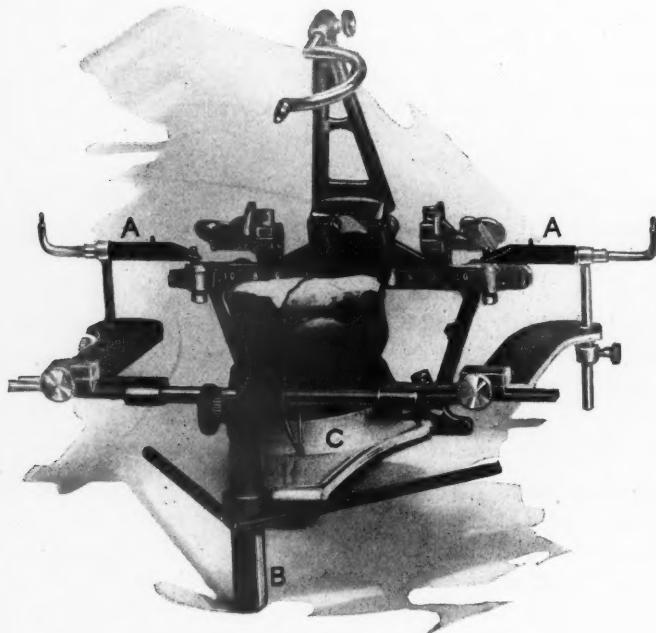


Fig. 1

The condyle path register and articulator are now linked into a simple apparatus and several methods can be employed to attach models with plaster.

The Connecting Links allow enough play so as to be able to raise the black stand, gooseneck, condyle path register and models all together

about three-fourths of an inch, keeping correct relations, and allow the flowing of plaster beneath the lower model, after which the black stand should be allowed to settle back to its level on slab, before plaster can harden.

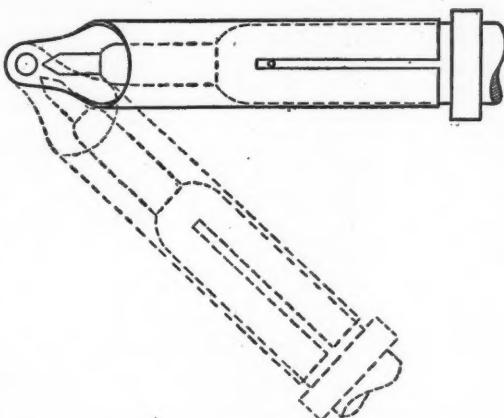


Fig. 2

Diagram showing positions of connecting link when pencil is in line with condyle and when at an angle

The upper bow of articulator can be lowered and the curved incisor pin adjusted and plaster flowed over upper bow either at this time, or after lower half is completely hardened and condyle path register has been removed. The latter method is the one I prefer.

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#### BACK TO THE LAND

The Home Service Section of the American Red Cross will continue not only through the period of demobilization, but also as a peace time activity and in some communities it will help others besides the families of soldiers and sailors. This has been decided at National Headquarters after a recent conference of directors of civilian relief work in the various divisions and in response to urgent requests which came from all over the United States. This desire for the expansion of Home Service came particularly from communities where there are no other organized agencies for social service.

## INQUISITIVE AND FAULT-FINDING DENTISTS

By "A. H."

A few days ago I received a compliment from a lady that I appreciated very much. The lady came into my office and asked if I would cement a loose inlay filling for her. I told her if she would wait a little while I would gladly do it. She waited and I recemented the inlay for her.

It was a large corner porcelain inlay on the mesial side of the right superior central, and it was a very creditable piece of work. I also saw that she had a varied assortment of dental work, including a Richmond crown, several Logan crowns, a couple of small bridges and a partial lower plate.

When I had finished she asked me how much my bill was and paid it. She was about to leave, but seemed to hesitate, and she then turned and said: "Doctor you are so different from other dentists that I want to express my appreciation of the treatment you gave me, and if I were to stay in town I should have you attend to every tooth that needed attention.

"I have had work done by almost one hundred different dentists, and this inlay I have had recemented over a dozen times in as many different states, with some very funny experiences and some that were very embarrassing, in fact almost sad. Would you mind telling me why you seemed so willing to do this little work for me? I was a perfect stranger to you, and you didn't ask me a whole lot of needless questions and put me off for a few days to a few weeks like most dentists, and still you seemed a whole lot busier than the majority of them, who take more time to make an appointment than it does to do the work."

In reply to her questions I told her I was anxious to accommodate her and at the same time make an extra dollar in a few minutes and while it didn't seem much in each case it amounted to a whole lot in a month and in a few years it would almost be equivalent to a retirement fund.

Again she asked: "Why didn't you ask me who made the inlay, or comment on the other work and take from about 10 minutes to half an hour to criticize the rest of my work? Almost every dentist I go to says I have some terrible dental work, and if I would only give them a chance what wonderful work they would do."

I asked her what she thought were some of the most flagrant mistakes dentists in general make? She answered as follows:

"First and foremost is the everlasting criticism of the work of their fellow dentist, either in an underhand way, but more often very direct.

This is neither professional, gentlemanly, courteous or even business-like to begin a tirade of fault-finding the minute a person sits down in the chair. In my case I feel disgusted with such methods, and I lose all respect for such a man.

"Second great mistake—is to arrange your appointments so as not to allow time enough to attend to emergency work of your patients or strangers away from home and their own dentists.

"Third great mistake is the asking of such questions as—

'Who did that piece of work?'

'How much did you pay for it?'

'Where are you staying here?'

'Have you ever heard of me before?'

"Such remarks as, that's the poorest piece of work I have ever seen. You were robbed. I'll do it for one-quarter of that price. My ten years old boy could do better. That isn't gold, it's only brass. That's the poorest match I have ever seen. He's used the cheapest material he could buy. That man should have his license taken away from him. Any one could tell they were false teeth with their eyes shut. I believe that such remarks are not only ungentlemanly and unprofessional, but they hurt the whole dental profession, and the sooner the dentists who are guilty stop this nefarious practice the sooner the public will appreciate and respect the dental profession. These remarks are so common that they appear to be the rule rather than the exception.

"Another funny thing I have noticed is the method of charging for such work.

"This inlay I have had recemented a dozen times at least, and I have been charged from 25 cents to \$3.00 to have it done. One dentist didn't want to charge me anything, but I insisted on paying; he said he would charge me 10 cents for the cement but I insisted on paying at least 50 cents, but he would only take 25 cents after much coaxing.

"Again the time it takes to do it puzzles me; several dentists have taken less than 10 minutes to do it, and some from 15 to 40 minutes. I have had it come loose in 3 days, and one time it lasted over a year. It generally averages 3 months."

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#### TUMOR AS RESULT OF IRRITATION

By W. F. SAVAGE, CLIFTON FORGE, VA.

Patient appeared, saying that he had something like a "little ball in his mouth," which was annoying him, but not causing any pain, and

wished it examined as he believed that it was being caused by a bridge.

**History:** A bridge from lower right second molar to first bicuspid, carrying two dummies, had been placed in the mouth about three years ago. Cheek had become a little raw shortly after, but had not bothered long.

Examination revealed a large sac, about the size of a hickory nut, lying against the bridge, and attached to the buccal mucous membrane by a small neck, about 1 mm. in diameter, and about 4 mm. long. (Figs. 1 and 2.)

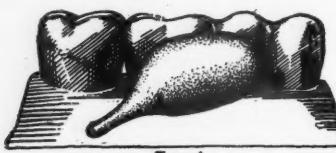


FIG. 1

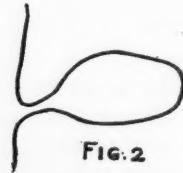


FIG. 2

This sac was soft, and easily compressible, but evidently filled with tissue, and not fluid, because it did not retain small pits when pressed with a small instrument. Moderate pressure did not hurt, but hard pressure was not tried.

Bridge was cut off and presented an edge on the gingival margin of the buccal surface of the dummies, which were of gold. This edge was about the thickness of the back of a blade of a pocketknife. (Fig. 3.)

Patient was warned as to possibility of serious results, and that since the tumor was of such long standing, it could very easily result in a cancer,



FIG. 3

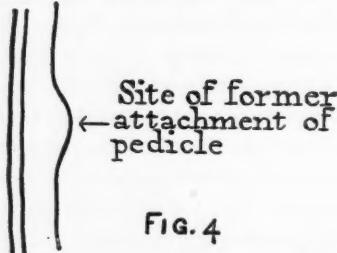


FIG. 4

and was referred to a surgeon who would know whether or not it would be necessary to remove part of the buccal mucous membrane or not. Patient, being of better than the average intelligence, was given a thorough lecture and warning.

However, he went to a physician instead, and the physician is attempting to treat it by cautery. The cheek now shows a slight thickening, at the point of attachment of the neck, and a part of the mucous membrane has been burned by the escharotic which has been in use. (Fig. 4.)

# DENTAL LAWS

## DENTAL LICENSE REQUIREMENTS IN THE UNITED STATES OF AMERICA

BY ALPHONSO IRWIN, D.D.S., CAMDEN, N. J.

### ASSISTANT DENTISTS

The number of questions addressed to us in regard to the employment of Assistant Dentists have been numerous. They have come from different parts of the United States, Canada, England and more particularly the English-speaking parts of the globe. With the exceptions of India, Ceylon, South Africa and several other British Colonies, these questions have related to the positions of assistants to dentists in the United States of America, although a few countries in Central and South America have been inquired about. Therefore, in response to these queries we have prepared a codification of the Acts relating to the employment of dental assistants in the United States, as the most comprehensive and authoritative way to answer the majority of such questions. Any one desiring to ascertain the gist of the law, need only to turn to the States concerned for the information desired, which for convenience are arranged systematically in alphabetical order.

The induction of feminism into the professions during the last fifty years presents an interesting phase of progressive educational achievements. The legal recognition bestowed upon women constitutes another chapter in the evolution of an enlightened legislation in the United States, which deserves special attention by the dentist, and separate consideration by the writer in order to elucidate existing legal Acts respecting women. Certain State Dental Laws authorize the examination of women for a license to practise dentistry; while a number of State Boards of Dental Examiners admit female applicants possessing a dental degree from a recognized dental school to the examinations, although the State Dental Law does not mention women as being eligible or refer to them in any way whatever. While the legal equality of both sexes has not been fully established in this country, the vocations of the law, medicine, dentistry, pedagogics, literature, the ministry, the rostrum and allied professions are open to women, and some states grant them licenses to practise each one of these professions by legislative enactments. It behooves the dental profession to take cognizance of the fact that senti-

ment in favor of the admission of women into these and other vocations is making decided progress. This growing popularity of feminism is most noticeable in the employment of lady assistants or dental hygienists in those commonwealths containing large towns and cities, while their services are indispensable in dental clinics anywhere. The young dentist naturally accepts this situation as a "matter of fact," but the older practitioners marvel at the changes in the attitude of different generations. These changes suggest the necessity for incorporating feminism into dental legislation. Such legislation is gradually being evolved by many states. The next step may be to require the dental hygienist to register in all states adopting dental hygienists' Acts.

### UNITED STATES

#### DENTAL ACTS RELATING TO THE EMPLOYMENT OF ASSISTANTS

##### CODIFICATION

*Alabama: Dental Law, Approved August 31st, 1915.* Alabama Section 1. (B) "It shall be unlawful for any person to engage in the practise of this specialty, as either assistant or employee, or to receive any license required by law to practise this specialty, except he shall have passed the examinations provided for by this act, and received the certificates, as herein provided, and any person practising this specialty in this state without having received a certificate, as herein provided, shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined not less than one hundred dollars (\$100) nor more than two-hundred and fifty dollars (\$250) for the first offense, and for the second offense a fine of not less than five hundred dollars (\$500) or imprisonment of from one to six months in jail, or both, in the discretion of the court."

Section 19. "It shall be unlawful for any person or persons to practise or to offer to practise dentistry or dental surgery under or use the name of any company, association, corporation or business name, or under any name except his or her name; or to operate, manage, or be employed in any room or rooms, or office where dental work is done, or contracted for, that is operated under the name of any company, association, trade name, or corporation. Any person or persons practising or offering to practise dentistry or dental surgery, shall practise under and use his or her name or their names, only."

Section 9. Penalty-Revocation. "The Board of Dental Examiners may refuse to issue certificate or suspend or revoke the same for any of the following causes: . . . 2. Or, who employs directly or indirectly any unregistered or unlicensed person to practise dentistry in his or her office."

*Arizona: Law effective July 7, 1913. 4761.* Whenever it shall appear to the secretary of state that any licensed dentist practising in the State of Arizona has been guilty of fraud, deceit or misrepresentation in obtaining a license; or of gross immorality, habitual use of intoxicants or drugs, rendering him unfit for the practise of dentistry; or of malpractice, gross ignorance, incompetency, or wilful negligence in the practise of dentistry; or of employing unlicensed persons to perform work which, under this act, can only be legally done by persons holding a license to practise dentistry in this state; or of committing any crime involving moral turpitude, either before or after conviction in court; or of practising deceit or other fraud, upon the public or individual patients, in obtaining or attempting to obtain practice; or of false advertisement, publication, or circulation of exaggerated claims, or fraudulent, or misleading statements of his art, skill or knowledge or of his methods of treatment or practice, he shall revoke the license of such person.

*Arkansas: Law effective February 17, 1915.* Section 7. *Revocation of License.* The State Board of Dental Examiners may refuse license or suspend or revoke the same for any of the following causes:

Fourth—The employment in the practice of Dentistry of any unlicensed person; the violation of any of the provisions of this Act, or the refusal to comply with any of the said provisions.

Section 13. *Unlawful Practice Under the Name of a Company.* It shall be unlawful for any person or persons to practise or offer to practise Dentistry or Dental Surgery under any name except his or her own name, or to use the name of company, association, corporation, or business name, or to operate, manage, or be employed in any room or rooms, or office, where dental work is done, or contracted for, under the name of any company, association, trade name, or corporation. Any person or persons, practising or offering to practise Dentistry or Dental Surgery shall practise under and use his or her name only.

*California: Law approved May 21, 1915.* Section 12. Any person, company or association shall be guilty of a misdemeanor, and upon conviction thereof shall be punished, by imprisonment in the county jail not less than ten (10) days nor more than one (1) year, or by a fine of not less than one hundred dollars nor more than one thousand five hundred dollars, or by both such fine and imprisonment, who . . . (5) shall within ten days after demand made by the secretary of the board, fail to furnish to said board the name and address of all persons practising or assisting in the practise of dentistry in the office of said person, company or association, at any time within sixty days prior to said notice, together with a

sworn statement showing under and by what license or authority said person, company or association, and said employees are or have been practising dentistry, but such affidavit shall not be used in any prosecution under this section, and any person shall be guilty of a misdemeanor and punishable as in this section above provided who . . . (3) shall engage in the practise of dentistry without causing to be displayed in a conspicuous manner and in a conspicuous place in his or her office the name of each and every person employed in the practise of dentistry therein, together with the word mechanic after the name of each unlicensed person employed; or (4) is practising dentistry in the state without a license, or whose license has been revoked or suspended; or (5) shall under any false, assumed or fictitious name, either as an individual, firm, corporation or otherwise or any name other than the name under which he is licensed, practise, advertise or in any other manner indicate that he is practising or will practise dentistry.

Section 13. Any dentist may have his license revoked or suspended by the board of dental examiners for any of the following causes:

(1) His conviction of a felony or misdemeanor involving moral turpitude, in which case the record of conviction or a certified copy thereof, certified by the clerk of the court, or by the judge in whose court the conviction is had, shall be conclusive evidence.

(2) The rendition of a final judgment against any such dentist in a court of competent jurisdiction upon a cause of action alleging grossly unskilled or negligent dental practice.

(3) For unprofessional conduct or for gross ignorance or inefficiency in his profession. Unprofessional conduct is hereby defined to be: The employment of persons known as cappers or steerers, to obtain business; the obtaining of any fee by fraud or misrepresentation; wilfully betraying professional secrets, employing directly or indirectly any student or any suspended or unlicensed dentist to perform operations of any kind, or to treat lesions of the human teeth or jaws, or correct malimposed formations thereof; aiding or abetting any unlicensed person to practise dentistry unlawfully; habitual intemperance; gross immorality; the use of any false, assumed or fictitious name, either as an individual, firm, corporation or otherwise or any name other than the name under which he is licensed, practise, advertise or in any other manner indicate that he is practising or will practise dentistry.

*Colorado:* Does not appear to have any provisions in its dental law in regard to the employment of assistants.

*Connecticut: Law effective July, 1917.* Section 11. All unlicensed assistants who registered their names with the dental commissioners prior to October 1, 1907, may continue to practise as assistants under the following conditions: (a) They may perform dental operations on patients in the office of a registered or licensed dentist, (b) they shall perform such operations in the immediate presence of and directly under the supervision of a registered or licensed dentist. The dental commissioners may cancel the registration of any unlicensed assistant for any of the reasons set forth in section five, subject to the right of appeal provided for in section eight. The provisions of this Act shall not apply to any practising physician or surgeon.

Section 5. Every applicant for a license shall be examined by said commissioners as to his professional knowledge and skill before such license shall be granted; such examinations shall be conducted in the English language, and they may refuse to grant a license when satisfied that the applicant is unfit or incompetent; they may for cause revoke any license that has been granted and may prohibit any dentist in practice from further practise on proof that such dentist has become unfit or incompetent. Cruelty, unskillfulness, gross negligence, indecent conduct towards patients, a court record of felony established within ten years last preceding such revocation, a violation of any provision of this Act or the aiding or abetting of such violation, obtaining a license or any fee by fraud or misrepresentation, or the advertisement of dental practice, treatment or devices, in which untruthful statements relative to such practice, treatment, or devices are made, or habitual intemperance, or such unprofessional conduct as shows unfitness on the part of any dentist, shall be sufficient cause for the revocation of a license, or prohibition to practise. Whenever a written complaint shall be made to a commissioner against any dentist, such commissioner shall investigate such complaint and on finding probable cause, shall notify the recorder who shall forthwith summon such dentist to appear before the dental commissioners and show cause why he should not be prohibited from practise, or why his license should not be revoked.

Section 6. Every such complaint shall be signed by the recorder, and shall contain a statement of the causes for which the prohibition or revocation is claimed, and shall specify the time and place for the hearing, which shall be at least twelve days after the service of such complaint. Such complaint may be served by leaving a copy thereof, attested by the recorder, at the place of business of such dentist, or at his last usual place of abode, or by sending the same by mail.

Section 7. Every dentist who shall, at any hearing before the commissioners, make or cause to be made a false statement or misrepresen-

tation with intent to deceive said commissioners, shall forfeit his license, or be prohibited from practise.

Section 8. Every dentist aggrieved by the action of said commissioners in the revocation of his license or prohibition from his practice, may appeal to the superior court in the county in which he resides, and such court shall, upon such appeal, inquire into the cause of such revocation or prohibition, and may confirm or revoke such order. Notice of such appeal shall be served upon said commissioners, by leaving with the recorder at his usual place of business an attested copy thereof, within twelve days after said commissioners shall have notified such dentist of their decision.

Section 9. Upon the payment of a fee of twenty-five dollars, the dental commissioners shall, at their meetings, examine applicant and grant licenses to such applicants as they shall find qualified. An applicant who fails to pass a satisfactory examination shall be entitled to a re-examination at the next meeting of the commissioners, without payment of a fee, but for any examination at a subsequent meeting, a fee of five dollars shall be paid.

Section 13. The dental commissioners may, without examination, issue a license to any reputable dentist of good moral character who shall have been in legal practice for five years or more in some other state or territory, upon certificate of the Board of Dental Examiners, or like board, of the state or territory in which such dentist was a practitioner, certifying to his competency, and that he is a dentist of good moral character, and upon payment of a fee of twenty-five dollars to said commissioners.

Section 14. Any registered or licensed dentist changing his residence to another state shall, upon application to the dental commissioners, receive a certificate which shall state that he is a duly registered or licensed dentist in this state; and such certificate shall be given without payment of any fee.

Section 15. Any person who owns or carries on a dental practice or business, or who by himself or by his servants or agents, or by contract with others, shall perform any operation or make examination of, with intent of performing or causing to be performed, any operation on the human teeth or jaws, or who shall describe himself by the word "Dentist," or letters "D.D.S.," or other words, letters, or title in connection with his name, which in any way represents such person as engaged in the practise of dentistry, or who shall diagnose or treat diseases or lesions of the human teeth or jaws, replace lost teeth by artificial ones, attempt to diagnose or correct malposition thereof, or who shall advertise or permit it to be done by sign, card, circular, handbill or newspaper, or

otherwise indicate that he, by contract *with others* or by himself, will perform any of such operations, shall be deemed as practising dentistry within the meaning of this Act.

*Delaware: Law approved April 19, 1917.* 890 Section 7. The State Board of Dental Examiners may refuse a certificate to practise dentistry and the said Board together with the Resident Associate Judge, resident in the County of the holder thereof may suspend or revoke the same, for any of the following causes:

Fourth:—The employment of any unlicensed person for other than mechanical purposes in the practise of dentistry; the violation of any of the provisions of this Act or the refusal to comply with any of said provisions. The violation of any of the provisions of this Act by any licensed employee in the practise of dentistry may be deemed to be a violation thereof by his employer.

The said Dental Board shall not reissue a certificate to any one whose certificate has once been revoked for any of the above causes within one year after such revocation, and only then upon sufficient assurances and guarantees to the said board of correct conduct for the future. A second revocation of any certificate shall be perpetual.

892 B Section 11. It shall be unlawful for any person or persons to practise or offer to practise dentistry or dental surgery under any name except his or her own name, provided, however, that such person or persons shall not be precluded from designating his or their place of business by any name or appellation in his or their discretion, if in connection therewith the name or names of the proprietor or proprietors of such place of business and of all his licensed employees shall be as prominently displayed. The provisions of this section shall apply to all display signs, advertisements and stationery used by said proprietor in connection with the practise of dentistry as aforesaid.

892 C Section 12. If any person shall engage in the practise of dentistry and employ a person or persons to whom a certificate or certificates to practise dentistry shall have been granted, he shall cause to be kept and displayed in a conspicuous place, at or near the entrance to his place of business, the name of every such person so employed by him, and any person so employing such a person without displaying his name as aforesaid, or any such person who shall work and be so employed without his name being displayed as aforesaid, shall be guilty of a misdemeanor, and upon conviction shall be punished as provided hereinafter in Section 16, for other misdemeanors.

892 G Section 16. Any person who shall practise, or attempt to practise, dentistry or dental surgery within the State of Delaware, with-

out having been registered, or obtained a certificate to practise dentistry or during the period of suspension or revocation of such certificate previously granted, or who shall violate any of the provisions of this Act, shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined not less than fifty dollars (\$50.00), nor more than two hundred dollars (\$200.00), or shall be imprisoned in the county jail not less than one month nor more than one year, or shall be punished by both such fine and imprisonment. Each act of practise or attempt to practise dentistry under the disabilities described in this section shall be deemed a separate offense within the meaning of this Act. And each day on which any person shall hold himself out as practising under any name except his or her own, shall be deemed a separate offense. The opening of an office for the purpose of practising dentistry or dental surgery, or announcing to the public in any way the readiness to do any act defined herein as practising dentistry shall be considered as engaging in the practise of dentistry within the meaning of this Act. It shall be the duty of the Attorney General of the State to prosecute every case to final judgment whenever his attention shall be called to a violation of this Act.

*District of Columbia:* Law approved May 31st, 1915. Section 4. The board shall publish every three years complete lists of the names and office addresses of all dentists registered and practising in the state, arranged alphabetically by name and also by the cities and towns in which their offices are situated. The board shall have power to call for and require a registration whenever it deems it necessary or expedient to secure accurate lists of registered dentists practising in this commonwealth, together with their office addresses. Every dentist when he begins to practise, either by himself or as an *assistant*, shall forthwith notify the board of his office address. Every registered dentist shall exhibit his full name in plain readable letters in each office or room in which his business is transacted. Any dentist failing to comply with the requirements of this section may be punished by a fine not exceeding fifty dollars.

*Florida:* The Act approved May 17th, 1911 does not contain any clause specifically relating to the employment of assistants.

*Georgia:* The Dental Law of Georgia approved August 16, 1909 does not contain any specific clause applying to the employment of assistants. It does state, however, in Section 14, "Be it further enacted, that it shall be unlawful for any person to practise dentistry or do any operation under the protection of another's license."

*Idaho:* Section 1360 contains the following clause in the code of 1909: "This chapter shall not be construed to prohibit an unlicensed person from performing mechanical work upon inert matter in a dental office or laboratory, or to prohibit the student of a licensed dentist from assisting his preceptor in dental operations while in his presence and under his direct and immediate personal supervision."

"Section 1365. It shall be unlawful for any person to practise dentistry in this State without having a license so to do from the Board of Dental Examiners. Any person, who as principal, agent, employer or employee, in any manner whatsoever shall practise dentistry, or who shall run, operate, or cause to be operated, or manage a dental office or headquarters in the State of Idaho, without having first filed for record and had recorded in the office of Recorder of the County wherein he shall so practise or do such act, a license from said Board of Dental Examiners as herein provided, shall be deemed guilty of a misdemeanor, and upon conviction, shall be fined in any sum not less than fifty dollars, nor more than two hundred dollars, or be confined for any period not exceeding six months, in the county jail, for each and every offense. All fines shall be paid one-half to the school fund in the county in which conviction is secured, and one-half to the State Dental Board."

*Illinois:* Section 18. *Association or Company Engaging in Practice to Display Names of Persons Employed by Company—Penalty for not Displaying Name—Unlicensed Persons.* Any association or company of persons, whether incorporated or not, who shall engage in the practise of dentistry under the name of company, association, or any other title, shall cause to be displayed and kept in a conspicuous place at the entrance of its place of business, the name of each and every person employed in said company or association in the practise of dentistry, and any one so employed by said company or association whose name shall not be so displayed as above provided, and the said association or company, if incorporated, or the persons comprising the same, if not incorporated, shall, for the failure to display the aforesaid names, be deemed guilty of a misdemeanor, and upon conviction thereof, each shall be punished as provided in this Act.

Any manager, proprietor, partnership, association or incorporation owning, running, operating or controlling any room or rooms, office or dental parlors, where dental work is done, provided or contracted for, who shall employ, keep or retain any unlicensed person or dentist as an operator; or,

Who shall fail, within ten days after demand made by the secretary of the Illinois State Board of Dental Examiners, in writing sent

by registered mail, addressed to any such manager, proprietor, partnership, association or incorporation at said room, office or dental parlor, to furnish to said secretary the names and addresses of all persons practising or assisting in the practise of dentistry in his place of business or under his control, together with a sworn statement showing by what license or authority said persons are practising dentistry, shall be guilty of a misdemeanor and subject to the penalties provided for in this Act: *Provided, however,* that such sworn statement shall not be used as evidence in any subsequent court proceedings.

*Indiana: Approved March 9, 1917. Posting Registration Certificate.*  
Section 15. That section fifteen (15) of the above entitled act be amended to read as follows: Section 15. Every practitioner of dentistry within the meaning of this act shall post, and keep conspicuously displayed, his name, license and registration certificate in the dental office wherein he practises, in plain sight of his patients, and if there are more dentists than one (1) practising or employed in any dental office, the manager or proprietor of such office shall post and display, or cause to be posted and displayed, in like manner, the name, license and registration certificate of each dentist so practising and so employed therein. Any person practising dentistry, within the meaning of this act, who shall fail so to post and display, or cause to be posted and displayed, the name, license and registration certificate of himself and any person practising, or employed to practise as a dentist in his dental office, or in a dental office under his management or control, shall be guilty of a misdemeanor, and upon conviction thereof, he shall, for each offense, be subject to a fine of not less than fifty dollars (\$50) nor more than one hundred and fifty dollars (\$150), or by imprisonment for a period of not more than thirty (30) days, or by both such fine and imprisonment in the discretion of the court, and for every subsequent offense he shall be subject to a fine of not less than one hundred dollars (\$100) nor more than two hundred and fifty dollars (\$250), or by imprisonment for a period of not less than sixty (60) days, or by both such fine and imprisonment in the discretion of the court.

(To be continued)

**THE WORK OF WOMEN DENTISTS IN FRANCE**

There has been no more important work done in France by American medical men and women than that of dentistry. This branch of surgery has received much less attention in France than in this country, yet for the foundation of future vigor it is necessary that young people should receive proper dental care. Recognizing this fact, one of the first appointments on the unit assembled to work with the American Committee for Devastated France in their district was Dr. Kate Doherty, a dentist of Milwaukee, who went over early in July, 1918. This unit of the American Women's Hospitals was first established at Neufmoutiers where it was assigned to take care of refugee children from the Aisne and young adults from the country around Tournan.

From Neufmoutiers the hospital was moved to Luzancy whence Dr. Doherty was sent to Boullay Thierry to treat a colony of eighty-six refugee children from the Aisne, who had been placed under the care of the American Committee for Devastated France. When her work was finished at this point she was sent to Viele Maisons to do emergency work for the passing troops; later she joined the original group at Luzancy. Four hundred and seventy-two dental cases had been seen by Dr. Doherty alone before help came to her, and at Luzancy she worked unceasingly and tirelessly, from early morning until late in the afternoon, including Sundays, until she was joined by Dr. Edna Ward of Colorado and Dr. Delan Kinney of New York, who were sent over by the American Women's Hospitals in February. With the arrival of these two dentists the dental work at Luzancy was divided into three branches; first, the hygienic, which includes the use of the tooth brush (each patient receiving one after the teeth had been cleaned) and lectures in the schools emphasizing the necessity of prophylaxis. Second, the operative, which includes the filling of nerve roots. Third, the extractions, done under local anesthesia. Below is a record of the work done by three American Women's Hospitals dentists in one month at Luzancy:

Cleanings and treatments . . . . .	260	Roots filled. . . . .	76
Amalgam fillings . . . . .	91	Pyorrhea-cases. . . . .	8
Cement . . . . .	49	Pericementitis cases . . . . .	6
Synthetic . . . . .	94	Extractions . . . . .	322
Silver . . . . .	46	Injections of cocaine . . . . .	134
Nerves treated . . . . .	62	Examinations . . . . .	83
Nerves extracted . . . . .	25	Total number of patients . . . . .	288

### STORY OF THE GAS DEFENSE

Now that the war is over it is possible to tell the story of the manufacture of two important substances used in connection with the Gas Defense.

Of course, the part played by poisonous gases in the war is now an old story, but it will come as a surprise to most people that Colgate & Co. have had a very real part in helping to combat this weapon of modern warfare—helping to make secure a protection which most of us thought was already afforded by the gas mask alone.

The modern gas mask, as everyone knows, has two eyepieces—lenses made of glass or celluloid or a combination of both. It is essential that these be clean and bright as long as the mask is in actual use. Should they for any reason become clouded, the soldier is as helpless as though he were blind. The difficulty in keeping these eyepieces clear seemed insurmountable—moisture from the breath would collect on them, making it impossible to see clearly through them.

The need of an anti-dimming material was recognized by the War Department in preparing equipment for the first overseas fighting contingent, and the men charged with the task of procuring it, reposing great confidence in the ability of Colgate & Co. to bring about a prompt and efficient solution of the problem, asked them to use every effort to discover the desired material and to begin its manufacture at once on a large scale.

With alacrity, of course, they agreed to do their utmost. During the next few days following the Government's request, experiment after experiment was made, and many things were tried. No trouble or expense was spared. Finally a compound was found which met all tests. After treatment with this compound the lenses remained clear even when the mask was put to the same arduous test that it would meet in the field of warfare.

While the tests were proceeding a special die had been made for stamping out the tubes in which the compound was to be packed. (In its early days the compound was in the form of a paste and a special tube was required.) The formula was perfected and the manufacture of the compound was begun, and in a very short time a large quantity was ready for shipment. Not only was the quiet work of those experimental days a vital help in defeating the enemy, but the mechanical feat of turning out thousands upon thousands of tubes in a few days was remarkable.

The Company, wishing to keep nothing secret from the Government

that might help them, turned over to them the formula of the first anti-dimming preparation. This was for the double purpose of facilitating improvement and posting the Government of just what they were using. In the very beginning Colgate & Co. had suggested a stick form for the compound as being more practical and quicker to manufacture. The Research branch of the War Department became greatly interested in the work and able chemists sought to procure an even better compound—one that would not fail even with careless application, and an anti-dimming stick was soon decided upon. This stick was about two inches long and half an inch thick, wrapped, except for one end in tinfoil, and packed with a small piece of cotton flannel in a round tin box. They were turned out at the rate of 100,000 a day, involving much labor and skill.

The method of applying the anti-dimming compound was simple. A small quantity was rubbed over the eyepieces, which were afterwards polished with the flannel cloth. After this treatment the moisture instead of collecting in drops, spread over the glass in a thin sheet which did not affect its transparency in the least.

As the effect of one application lasted for days, one stick should have been enough for a lifetime. But unfortunately the little tin box, which was sturdy and well made, presented to the doughboy alluring possibilities as a holder for matches or cigarettes—and away went the stick. It was necessary to have sufficient sticks to replace any that were lost.

The other substance, known as Sag-Paste, was used to combat the frightful mustard gas, which was used so extensively during the latter part of the war. This gas, which strictly speaking was not a gas at all but a volatile liquid, not only affected the throat and lungs, but where it penetrated the clothing, caused serious burns—especially where the skin was damp from perspiration.

The German drive to the Marne in 1918 was made largely with this gas. Shells were filled with it, which on exploding, often killed everything in the vicinity. As the gas mask protected only the face, something was needed to prevent the gas reaching the body. An important problem suddenly confronted the army, and the Commander-in-Chief cabled to Washington urging that something be found to counteract the effects of mustard gas, and shipped abroad as soon as possible.

Colgate & Co. were let in on the secret at the start and were asked to experiment in an endeavor to get a preparation that would protect the skin against the burning action of the gas. Haste was the first consideration and the first experiments were made with materials which were procurable at once in large quantities. Various ointments were tried out on volunteers who allowed themselves to be exposed to the gas, first rub-

bing the ointment on the skin. One of the ointments which was submitted was found to give the needed protection and the Company began its manufacture with all haste. The Sag Paste was packed in special large tin tubes, seven inches long and an inch and a half in diameter and large quantities were prepared and shipped in June—the month in which the need first became apparent.

Colgate & Co. continued the manufacture of Sag Paste until the signing of the armistice. An idea of the gigantic scale on which this work was carried out, which will also give a hint of its importance as a war measure, can be gained from the fact that hundreds of tons of Sag Paste were made and shipped, and several carloads of pure block tin were used in the manufacture of the tubes.

Why the name "Sag Paste"? The word GAS spelled backwards!

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#### COMMENDATION OF A DENTAL OFFICER

It is always a great pleasure to know that members of the U. S. Dental Corps have conducted themselves in such way as to reflect credit upon their profession and upon themselves individually, in the eyes of their associates and superiors. Copies of two letters, relating to the work of First Lieutenant Bernard L. Riley (now Major Riley), have come to the notice of the editor, and portions of them are here given. The unpublished portions are more personal in character and are highly laudatory.

The first letter is from Major Albert T. Rich of the Inspector General's Department, who was the Assistant Inspector General of the First Army of the American Expeditionary Forces in France. It says, in part:

"Lieutenant Riley served with the 2nd Division during all of the famous actions participated in by it, and in addition to performing his duties as Dental Surgeon assisted the surgeons on the battlefield in caring for and treating the wounded. On many occasions he performed voluntarily duties on the field of action at the risk of his own life when the services of medical officers were greatly needed. He has been 'gassed' on several occasions, and on many others has been subjected to heavy shell fire. This, however, did not prevent him from going wherever his services were most needed. Every officer and enlisted man that I have met in the 2nd Division has spoken with praise of Lieut. Riley and his work, both in action and in the rear."

The second letter is from Lieut. Col. R. H. Rhoades. It is too personal in form for reproduction, but it recites that Major Riley worked early and late in the training area in preparing the men of the 2nd Division

for the summer's campaign. At the same time he learned to administer first aid to the wounded. He went with the 2nd Division to every battle, doing dental work when necessary and medical work when called upon to do so, which was not infrequently. He was under shell-fire in every battle in which the 2nd Division participated, beginning at Verdun, and including the fight at Château-Thierry. Following Château-Thierry, the 2nd Division was thrown into the Argonne battle as "Shock Troops" and Major Riley participated in the actions up to and including that at Sedan, just previous to the Armistice. Following this Major Riley was appointed Attending Dental Surgeon at the Headquarters of the First Army, and also appointed one of a Board to advise dental equipment for war purposes.

Probably Major Riley's record can be paralleled in greater or less degree by the records of other members of the Dental Corps, but it is a source of no small amount of pride to all dentists that these men who went as representatives of the profession should win respect and praise for themselves, as exponents of that profession, from those who were compelled to know them, to depend upon them and to benefit by their services.

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#### DR. J. V. CONZETT

A Banquet in honor of Dr. J. V. Conzett, President-Elect of the National Dental Association was held in the Masonic Temple, May 7th, the second evening of the annual meeting of the Society at Des Moines.

Floral offerings and messages of congratulation were received in the course of the evening. The speakers assured Dr. Conzett that Iowa is proud of him for what he has done for dentistry, proud of him for the honor he has brought to his state in being selected as president-elect of the National Dental Association, and further assured him that he would be given a hearty reception when he visits New Orleans this fall.





### A REPORT OF FRENCH-BELGIAN RELIEF WORK

Our campaign for raising funds for French and Belgian dentists is now well under way and is meeting with hearty support by the profession. It is evident that American dentists realize that they have an opportunity to be of great assistance to their professional brothers at the time of their greatest need. Contributions to June 1st amount to \$1,705.47.

It has been ascertained that adequate equipment for the average French and Belgian dentist can be obtained for \$500. The League hopes to secure a contribution from each State of at least this amount, and each dentist established will be designated as a beneficiary of a certain State. He will thus be made accountable, as it were, to the State named and a periodical report rendered if so desired. In other words, each State may take one or more dentists under its wing, as it were, and through this plan have individual as well as collective interest in this great work. Individual contributions will be grouped so that each donor may be informed of its ultimate use in order to lend a personal touch to our work.

Captain Blake A. Sears, of the Replacement Depot, Dental Corps, St. Hignan, France, states in a recent letter that: "L'Aide Confraternelle is O. K. They are doing a good work and much praise should be given them." This is an organization of French and Belgian dentists through which the League will operate.

Kindly look over your unused equipment and send a list of what you can spare, including materials also, to the office of the President of the League, 131 Allen Street, Buffalo, N. Y. Do not delay, but bear in mind that many instruments now idle and rusting may bring bread and life to our suffering brothers.

J. W. BEACH.

## PRACTICAL HINTS

This department is in charge of Dr. V. C. Smedley, 604 California Bldg., Denver, Colo. To avoid unnecessary delay, Hints, Questions, and Answers should be sent direct to him.

**PARTIAL LOWER PLATES.**—Those of you who have had many years of experience know that the partial lower very often gives trouble, after some time, from absorption of the gum, the plate sinking, giving faulty occlusion. The question arises: What are we going to do? The difficulty is overcome, in my opinion, in a very simple manner—by roughening the base and attaching a portion of softened wax, then getting the patient to bite on the plate, which brings it up to its original position. This, when trimmed and vulcanized, gives perfect results. This method, of course, applies to bar lowers.—A. BURNE, D.D.S., Sydney.

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### *Editor Practical Hints:*

I have a case on which I would like to get some help. A man came to me recently to get an upper denture made. He is 42 years old and has lost all of his upper teeth except the cuspids and the second molars. The cuspids and left molar are slightly loose from pyorrhea, and he has a complete cleft palate. The cleft begins just posterior to the alveolar ridge and extends through the soft palate. He has no harelip.

He thinks it will help him to talk if he can get a good denture. Do you think he could get one to stay up? What do you advise to do with those teeth and how can I get an impression of the cleft without the impression material going up into the nasal cavity and getting lodged there?

He is not a rich man but has a good home and living, and I would like to know what would be a reasonable amount to charge for such a job.

**Question No. 2.**—Is there any danger of extracting teeth for a lady during menstruation?

B. F. WALTON, D.D.S.

**ANSWER.**—Your cleft palate case is a very interesting one. I would certainly treat those four teeth for pyorrhea and keep them in, if possible,

to check the suppuration. I would then make four broad, well-fitting cast clasps which would serve as anchorage for a rim plate or anchored restoration carrying the missing teeth. I would then make a hard rubber or cast aluminum obturator entirely separate from the denture—a small obturator suspended in and simply closing the cleft. The impression for this purpose is made with plaster in sections. First inserting soft plaster in one side of cleft, smoothing it off as the plaster sets to a reasonably smooth sloping surface. Paint this with vaseline or any other agent that will prevent a second mix adhering to the first. Now insert soft plaster in second side of cleft. Smooth off flush with surface of palate and when hard paint again with separator and take impression of palate with tray in ordinary way. When this is hard, remove impression of palate and cleft in three sections, assemble and pour with Spence plaster or Weinstein's artificial stone. On this cast a modeling compound obturator is fitted. This compound model is then fitted to the cleft at the mouth, carrying the compound back with a fine wire frame to contact with the posterior pharyngeal wall when contracted in the act of swallowing. This perfect muscle-trimmed compound obturator is now reproduced by the vulcanizing or casting process, in either rubber or aluminum.

You can make a paste of equal parts of wheat flour and plaster mixed with water that can be packed into any undercuts of which an impression is not desired. This paste will hold its form where placed, but will not set and can be readily removed.

A reasonable fee for your service might range anywhere from \$200 to \$1,000, according to the plane of your usual fees and according to the man's ability to pay for and appreciate said service.

SECOND QUESTION.—Believe there is no danger in extracting teeth during menstruation, and no objection except that some women are more nervous and hypersensitive at this time.—V. C. S.

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*Editor of Practical Hints:*

To relieve nausea while taking impressions instruct patient to breathe heavily through nose. What comment would you see fit to make on this suggestion?

ANSWER.—I have been telling my patients to breathe forcibly through the mouth to relieve nausea while taking impressions, having been told once that the nerve endings that convey the sensation of gagging are situated at the base of the tongue, rather than upon the palate, and when a person is breathing forcibly through the mouth these nerve endings are thus separated from contact with the plaster of the impression. Very

likely, however, the fact that they are set busy doing anything forcibly tends to divert their minds from the sensation of gagging. Spraying the throat with camphor water a few minutes before taking impression helps in stubborn cases.—V. C. S.

*Editor of Practical Hints:*

Owing to the fact that I haven't been reading DIGEST very closely I will thank you to give me the following information.

I notice in May number of DIGEST Dr. N. Rudin's formula for Iodine Preparation, and I will thank you to let me know just how this preparation is used? Also would like to know how Dr. F. J. Crymes' Iodine and Benzol preparation is applied? How much of either of the preparations can be used safely, and can they be used freely on the gums and mucous membranes of the mouth?

Also, will thank you to let me know if there are any harmful effects of using pure Iodoform in the mixture of a root filling? You can take as an example the use of pure Iodoform in a Cabol Eugenol root filling.

S. L. JEFFRIES, D.D.S.

ANSWER.—The Iodine and Benzol preparations referred to are for application to the membrane at the point of injection of a hypodermic needle for infiltration or nerve blocking anaesthesia. This application is for the purpose of obtunding the membrane at the point of injection as well as for its antiseptic action. Either of these preparations may be used as freely as could be desired for this purpose without fear of harmful effect.

I know of no harmful effect from the use of iodoform in root canal fillings. I have treated a good many foul canals and abscessed roots where iodoform had been used in filling. But I believe the fault lay in the improper cleansing of the canal and in a failure to produce a sufficiently dense and impervious filling.—V. C. S.



## CORRESPONDENCE

*Editor DENTAL DIGEST:*

There is a great need of real dental examiners in our public schools.

The dentist every now and then is up against it when he meets with some of the young school children with marked dental charts, indicating dental treatment needed. I have reference here to a young girl who is in the senior grade in High School, and who was referred to a dentist with one of these marked charts.

At the time she came to my office for an examination of her mouth I found that she had cavities in five of her teeth. When I told this to the little girl she looked at me amazed, as if I were trying to misrepresent conditions and at the same time took a nice long dental chart from a purse and handed it to me in a way as if to show me up. I looked at it carefully, examining it and reexamining it, and it failed to disclose more than two cavities. Well, at the moment I did not know what to say, so I asked her whether or not a dentist examined her mouth. She did not know, was her answer, but she thought he was a physician.

Now, why should the city economize the salary of a dental examiner at the expense of this little girl? What is to be done toward the appointment of dental examiners in Public Schools?

IRVING P. AARON.

*Editor DENTAL DIGEST:*

A correspondent, D. F. L., in a recent number of your magazine seemed to be so decided in his opinion that I am going to take issue with him.

An honest man *can* guarantee his work and will do so, if he understands his business. Being sure of the materials he uses, is part of that business.

I have guaranteed my work for 18 years, and at this time I do not have to spend one hour a week in repairing or reconstructing the dental work I have done in the past. What little I have to do is as pleasurable as any work I have—it is so unexpected and so highly appreciated.

I am an advertiser, but I can lay claim to none of the sins he chooses to lay upon all advertisers' heads except the one of guaranteeing my work, which, I maintain, any honest and good workman can do. My fellow dentists in town are my best friends—I do them every service I can. I

do not advertise prices, but no one in my town gets better. I make but one gold crown where my old so called ethical partner made a hundred.

The efficacy of the kind of advertising I use, and the service it has done both to the public and the profession, has already been discussed at great length in all the dental publications. There are too many things to be said in favor of it, to even attempt it in this short letter. But I cannot help but take exception to his uninformed and indiscriminate tirade.

R. D. M.

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#### GOVERNOR OF INDIANA APPOINTS A DENTIST TO STATE BOARD OF HEALTH

Seeing an opportunity of increasing the efficiency and broadening the scope of the activities and usefulness of the Indiana State Board of Health, the Governor, Hon. James P. Goodrich, appointed on May 9th Dr. Frederick R. Henshaw, Dean of the Indiana Dental College, a member of that Board to serve for a period of four years.

There is but one other instance where the Governor of a state has shown such rare good judgment and far sightedness in appointing a Dentist on the State Board of Health. The Governor of Ohio having appointed Dr. Homer C. Brown of Columbus to a like position at the time of his election to the Presidency of the National Dental Association.

The Indiana State Board of Health has conducted an Oral Hygiene Campaign throughout the state during the past few years in conjunction with its other educational work. It is the intention of the Board to now extend this field and create a separate department for this particular work. There is no other man in the State who is so peculiarly fitted for this particular line of work as Dr. Henshaw. He has been intimately connected with every movement of this character in the United States for the past twenty years. His efforts to secure better Dental conditions in the public schools of the State have received the attention of men all over the country, and it was largely his efforts and successes along this line that won for him this very fitting recognition.

The policy of Governor Goodrich is one well worthy of consideration by other Executives, for disregarding political affiliations he chose the man best fitted for the place. Politics have no place where the health and welfare of the public are at stake, and Governor Goodrich was big enough to see this.

## DENTAL ECONOMICS

### WAS THE DEALER RESPONSIBLE?

BY ELTON J. BUCKLEY, PHILADELPHIA, PA.

[Readers of THE DENTAL DIGEST are invited to submit questions of a legal nature to Elton J. Buckley, care of THE DENTAL DIGEST. This service is free.—EDITOR.]

Here is the familiar question of the retailer's responsibility when he sells something manufactured by somebody else, and it either goes wrong or doesn't live up to the manufacturer's guarantee:—

Great Falls, Mont.

We are handling the — tractor in our territory and have sold six of these tractors to farmers in this vicinity, having sold the tractors on the — Tractor Co.'s advertising and literature that the tractor would pull two fourteen-inch plows in breaking or stubble plowing. However, the tractors have not been able to pull two fourteen-inch plows under any condition and stand up under the work. Now, six of the ranchers to whom we have sold tractors have started suit against us for the money, and some cases for damages for loss of time and crop which they could not put in.

We are handling these tractors on a contract made with the — Tractor Co., as their distributors in this territory, and would like to know if we are responsible to the ranchers on the — Tractor Co.'s guarantee on their tractor?

We would appreciate this information as soon as possible.

WESTERN MOTOR CO.

It is a tractor this time, but it might just as well be a grade of jams, labeled pure, but which was not pure; or a blue serge suit labeled "guaranteed fast color," but which faded in three months; or an automobile which was guaranteed to give eighteen miles to the gallon, but which only gave nine. The question is the same in every case, and so is the answer—"when the dealer who sells it doesn't make it, where is the responsibility when it doesn't make good?"

The answer is, the responsibility is always the maker's, and never the dealer's, provided the dealer didn't make the responsibility his own by giving a guarantee of his own. Read this from a leading case:—

"A seller is of course bound by his own warranty, or that of his authorized agent, but he is not bound by a warranty attached to the article by the manufacturer thereof, by the mere act of sale."

Suppose a case in which a dealer is selling a product, machine, or what not, made by somebody else. The quality is described on the label, or on a tag, or in a catalogue, or in advertising. The dealer doesn't know anything about it, except what he gets from the same source of information that everybody has. This tractor case submitted to me seems to be a case like this.

The thing sold falls down. It doesn't fulfill its guarantee, or the representations made for it. No suit can be successfully brought against the dealer, and I predict that the one brought against the Western Motor Co. will fail, unless they made themselves responsible by some representations of their own.

For instance, suppose a prospective buyer for some product made by somebody else comes to a dealer handling it and talks the thing over, in other words, gets a line on the thing he is proposing to buy. The only safe course for the dealer in such a case is to merely repeat what the manufacturer has said about the article and to make it clear and plain that he is merely repeating the manufacturer's statements and is not saying anything at all on his own responsibility. Very often dealers don't do this—they make the statements and the representations just as if they were their own. When they do that they are liable if the thing goes wrong, for they have made their personal representation and given their personal warranty.

For instance, in a case like this, a customer wrote to a dealer ordering a certain machine, stating that it was to do certain work. The dealer replied, "You may rely on having a first-rate machine, which will do your work in a satisfactory manner." The court held that that was a specific warranty by the dealer, and he was responsible under it. But the case books are full of cases deciding that the dealer is not responsible when the sale was made alone on the manufacturer's representation and the manufacturer's guarantee. In one case some cloth went wrong, and the buyer sued the dealer instead of the manufacturer. The case was dismissed, the court ruling that the dealer was merely a merchant, selling cloth not his own manufacture, and there was no implied warranty even against latent defects.

The same thing was decided in another case where a dealer bought some wrought iron shafting from the manufacturer. After being installed it broke. The buyer sued the dealer, but was thrown out of court.

Of course, a dealer who is asked about the quality of some article he

is selling, doesn't quite have to preface everything he says with "the manufacturer says this" and "the manufacturer says that." He can express his opinion, belief, judgment, or estimate at any time without being responsible, for such expressions are not warranties at all.

### THE HOME IS THE HOPE OF THE WORLD

The best cure for what is the matter with the United States or any other country, for that matter, is the Home, says Dr. Crane.

No Movement will move unless it starts there.

No Reform will reform unless it originates there.

No Law will stand unless it is favored there.

No Religion will prosper that is not usable there.

No Education is of much account that does not include the Home.

A real Democracy is a cluster of Homes, not a number of Individuals.

The real Unit of either Politics or Economics is not the Man, but the Home.

Every nation is more or less artificial. The State is a man-made thing, a device, an expedient. The Home is a natural thing. It is founded on the Instincts.

Hence it is Eternal. It was present in the world before any other institution—the State, the Church, or the School; it will be present when all these have changed, fallen, and been reshaped a hundred times.

We do not have Revolutions in this country for just one reason—we have too many contented Homes.

The Home implies three things, which are the greatest things in the world. One for Man, one for Woman, one for Child.

For it implies a Man who Works.

And a Woman who is Good.

And a Child who is Taught.

Only the Man who Works is a good citizen, for he assumes his due responsibilities, keeps the peace, observes the law, and his veins are "the veins of wealth" to any land.

Only the Woman who is Good is fit for mothering, and the world needs mothers more than statesmen, poets, and professors.

Only the Child who is Taught is fitted for citizenship.

If you want to save the world, don't take to the pulpit—go home.

If you want to reform society, don't mount the soapbox—go home.

When in doubt—go home.

Make Home a decent, happy place, and you have done something which you know will count. Anything else is debatable.

## JULY

In fullest bloom the damask rose is seen,  
 Carnations boast their variegated dye,  
 The fields of corn display a vivid green,  
 And cherries with the crimson Orient vie.  
 The hop in blossom climbs the lofty pole,  
 Nor dreads the lightning though the thunders roll.

The wealth of Flora like the rainbow shows,  
 Blending her various hues of light and shade;  
 How many tints would emulate the rose  
 Or imitate the lily's bright parade!  
 The flowers of topaz and of sapphire vie  
 With all the richest colors of the sky.

## EXTRactions

A big business is first a big idea.

To err is human; ability to conceal it is divine.

Aviation heroes: Read and Wright. Figure out what that means.

The good die young and the other kind when they can't help it.

Only a good brass band can play all the airs the drum major puts on.

There is nothing in a name. No river thief has ever stolen a river.

A man never realizes how high a fence he can jump until he is badly scared.

Don't mistake habit for character. Men with the most character have the fewest habits.

We have to guess what the future and the merchant who never advertises have in store.

Speaking of the "3 in 1" thing, it has been found that Dr. Lawyer is a dentist in Atlanta, Georgia.

It wasn't so much what he wrote that made Shakespeare famous. It was the way he wrote it.

There are two kinds of girls in this funny world: Pretty girls, and those who stand in crowded streetcars.

If a man or a machine is unable to accomplish a task it should be turned over to a woman and a hairpin.

Dry, orderly people are not the most hilarious company, but they usually have stamps when you need one.

The English language is called the mother tongue, just because father never gets a chance to use it.

Poet—All I need is an opening, sir.

Editor—What's the matter with the door you just came through?

Rufus—Does your rheumatism trouble you nights?

Luke—Nope; I'm never home nights.

Conan Doyle says he can communicate with the dead. He means, of course, that he has been writing letters to William Jennings Bryan.

The old fashioned man who used to go to a portrait painter when he wanted to be done in oil, now has a son who goes to a promoter.

Experience teaches men two things: first, that there are certain things he ought to avoid; and second, that there is not much chance of his avoiding them.

Jones—I say, Brown, who was the stingiest man you ever heard of?

Brown—He was a miser who ate nothing but soup so he wouldn't wear out his teeth.

An enterprising editor offered a money prize for the shortest "short story" that could be written. The following won the prize:

A lasa loved a sailor.

Alas!

"What'll you have?" asked the waiter.  
 "I'm not predicting," replied the weary citizen.  
 "I'm going to order a cup of strong coffee with fresh cream and a steak done rare. Then I'm going to eat what you bring me and say no more."

"There is something I would like to call your attention to," said the polite clerk as he showed a piece of goods.

"It is the very latest thing out."

"Is that so?" inquired Mrs. Rounder.

"Well, if there is anything out later than my husband is

I'll take it if only for a curiosity."

"Where's your wife? Haven't seen her often lately."

"Oh, I sent her away on a little vacation."

"So? Where'd she go?"

"To the Thousand Islands."

"Stay long?"

"Yes. I told her to take a week to each island."

She selected the hat with great care, examining it from all angles and with numerous questions as to its durability. Her husband was with her during the scrutiny, and his face wore a growing look of disapproval. Although the headpiece was extremely modest in price, yet he could not appear satisfied. The hat was for him.

# THE BEST OF CURRENT THOUGHT

[*The Dental Cosmos*, June, 1919]

## *Contents*

### *Original Communications*

A Removable Retainer. By C. A. Hawley, D.D.S.

Treatment of Ununited Fractures of the Jaws; *Résumé* of Work Done by Dental Department, U. S. Army Gen. Hosp. No. 11, Cape May, N. J. (II.) By First Lieut. D. H. McCauley, D.C., and First Lieut. B. L. Worthley, D.C., U. S. Army.

Oral Prophylaxis in Its Relation to Preventive Dentistry. By Arthur H. Merritt, D.D.S. Plastic Surgery and Auricular Prosthesis. By Dr. Pont.

Case Report Showing the Value of the Radiograph as a Protective Factor in Dental Practice. By D. B. Williams, D.D.S.

Dakin's Solution in the Treatment of Pyorrhea. By L. P. Henneberger, D.D.S.

Impression Filler, Surfacer, and Separator. By Rupert E. Hall, D.D.S.

### *Editorial Department*

The Dental Movement in Great Britain.

Practical Hints.

Review of Current Dental Literature.

Periscope.

### *Dental Legislation*

Maine Dental Law Providing for Dental Hygienists (as amended).

### *Society Notes and Announcements*

Coming Dental Meetings

Psi Omega Fraternity, Ohio Alumni Chapter.

Notice to Dental Surgeons of the American Expeditionary Forces.

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Other Dental Society Notices.

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Report of a Royal Commission to Investigate the Evils connected with the Practice of Dentistry and Dental Surgery by Persons Not Qualified under the Dentists Act, 1878.  
[Unabridged.]

[*Journal National Dental Association*, June, 1919]

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#### *Original Communications*

Favorable and Unfavorable Conditions in Crown and Bridge-work. By Edwin H. Mauk, D.D.S.

The Relation of Mouth Conditions to General Health. By Charles Mayo, M. D.  
Metallographic Phenomena Observed in Amalgams. By Arthur W. Gray, Ph.D.

#### *The Research Department*

A Memorial Hour to the Late Dr. John R. Callahan. A Brief Review of His Professional Activities. By T. Irving Way, D.D.S.

An Estimate of His Personality. By Thomas P. Hinman, D.D.S.

A Review of the Life Work of John R. Callahan, Being Especially a Digest of His Contributions to the Progress of the Science of Correct Root-canal Technic. By Rodrigues Ottolengui, D.D.S.

The Supporting Structures and Vascularization of the Teeth. By John R. Callahan, D.D.S.

#### *Editorial Department*

Did "Theodore Roosevelt's Teeth Kill Him?"

The Things that Are Caesar's.

Why Don't They Pay Their Bills?

#### *Army and Navy*

Performing 112,440 Dental Operations at Great Lakes (Illustrated).

Victory Button Authorized.

Be Satisfied.

Dental Corps Orders from War Department.

#### *Announcements*

National and State Societies Meetings—The Last Chapter of the New Mexico Dental Legislation—Maine Dental Society.—Virginia State Dental Association.—California State Dental Association.—Committee of Dental Examiners of Illinois.—South Carolina State Board of Dental Examiners.—Meeting of the Tennessee State Board of Dental Examiners.—Oklahoma State Board of Dental Examiners.—Semi-Annual Meeting of the Rhode Island Board of Registration in Dentistry.—Meeting of the Maine Board of Dental Examiners.—Tennessee State Dental Association—The International Society of Prosthetists.—Virginia State Board of Dental Examiners.

## FUTURE EVENTS

Reunion and Convention of the Psi Omega Fraternity, Ohio Alumni Chapter, will be held at Cedar Point, Ohio, July 7 and 8, 1919.

E. L. PITTIBONE, *Chairman,*  
6503 Detroit Ave., Cleveland Ohio.

Notice is hereby given that there will be a meeting of the Arizona Board of Dental Examiners, at Phoenix, Arizona, beginning July 10, 1919, to examine candidates for a license to practise dentistry in Arizona, and to transact such other business as may properly come before the board. Application blanks may be secured from Secretary of State, Phoenix, Ariz.

W. P. SIMS, *Secretary of Board,*  
Box 58, Bisbee, Ariz.

The Delaware Board of Dental Examiners will meet for the examination of candidates on July 16th and 17th, 1919, in Wilmington, at the Municipal Building, at 9:30 A.M. Fee for examination \$25.00.

W. S. P. COMBS, D.D.S., *Sec'y,*  
Middletown, Delaware.

The Fifty-second Annual Meeting of the Tennessee State Dental Association will be held at the Hotel Hermitage, Nashville, Sept. 4-5-6, 1919.

From all appearances our program promises the greatest meeting ever.

JAMES J. VAUGHN,  
*Chairman Pub. Com.*

The Thirty-second Annual Meeting of The Northern Illinois Dental Society will be held at Rockford, Wednesday and Thursday, October 8th and 9th. A cordial invitation is extended to practitioners of Dentistry.

R. P. CULVER, *Sec.,*  
Dekalb, Illinois.

The Association of Military Dental Surgeons of the United States will hold its annual meeting at New Orleans, October 20, to 24, 1919.

R. W. WADDELL, *Secy-Treasurer.*

An invitation is extended to every member of the National Dental Association to attend the Twenty-third Annual Session of the Association, October 20, 21, 22, 23, 24, 1919, in New Orleans, La.

Jos. P. WAHL, *Chairman Local Committee.*

C. V. VIGNES, *President.*

**PRELIMINARY ANNOUNCEMENT OF THE 1919 PROGRAM OF  
THE NATIONAL DENTAL ASSOCIATION**

New Orleans, La., October 20-24, 1919

**Program of the Section on Orthodontia and Periodontia**

*Tuesday Afternoon, 2:00 o'clock*

"An Analysis of the Various Principles of Orthodontic Treatment that have been Advocated during the Last Fifteen Years." By J. A. Cameron Hoggan, Richmond, Va.

"Necessity for Oral Prophylaxis and Radiology in the Practice of Orthodontia." By F. M. Casto, Cleveland, Ohio.

"Observations upon the More Recent Developments in Periodontology." By Arthur H. Merritt, New York, N. Y.

"Why the Field of Prophylaxis is Marked with a Lack of Enthusiasm." By Dorothea A. Howes, Washington, D. C.

*Wednesday Morning, 9:00 o'clock*

"Plurality in Etiology of Periodontoclasia." By John O. McCall, Buffalo, N. Y.

"What to Extract, and What Not to Extract, with Reference to Infections Involving the Periodontal Membrane." By Louis D. Corriell, Baltimore, Md.

"An Analysis of Case Characteristics with Reference to the Selection of the Most Efficient Form of Appliance for Treatment." By A. H. Ketcham, Denver, Colo.

"The Problem of Retention." By C. A. Hawley, Washington, D. C.

**Program of the Section on Operative Dentistry, Materia Medica and Therapeutics****FIRST SESSION**

"The Prevention of Chronic Mouth Infection." (Illustrated with stereopticon slides.) By Arthur D. Black, Chicago, Ill.

Abst.—This paper will consider briefly the pathological changes which occur in cases of chronic alveolar abscess and chronic pericementitis, and will then discuss the causes and take up in detail the methods to be employed in operative dentistry for their prevention. Extensive studies of radiographs of root fillings will be reported, and means of simplifying pulp treatment and root-canal technic will be presented. Particular stress will be laid upon improvements in operative procedures to prevent peridental infection.

Discussed by—H. E. Friesell, Pittsburgh, Pa. A. H. Hippel, Omaha, Neb.

"X-Ray in Dental Practice." By C. Edmund Kells, New Orleans, La.

Discussed by—H. B. Tileston, Louisville, Ky. Howard R. Raper, Albuquerque, N. M.

**SECOND SESSION**

"Some Recommendations for the Sterilization and Filling of Infected Roots." By Weston A. Price, Cleveland, O.

Discussed by Clarence J. Grieves, Baltimore, Md. Percy R. Howe, Boston, Mass.

"The Gold Inlay," By R. H. Volland, Iowa City, Iowa.

Discussed by—Wallace Wood, New Orleans, La. W. L. Fickes, Pittsburgh, Pa.

**Program of the Section on Histology, Physiology, Pathology, Bacteriology and Chemistry—Research****FIRST SESSION**

"How Mouth Infection Affects the Kidneys." By Thomas B. Hartzell, Minneapolis, Minn.

"A Phase of Dental Caries." By Percy R. Howe, Boston, Mass.

"A Biochemical Study of Bacterial Metabolism in Its Relation to the Denser Tooth Structures." By Samuel E. Pond, Cleveland, Ohio.

**SECOND SESSION**

"A Dental Histo-Pathological Study." By Harold Box, Toronto, Canada.

"Physiology and Pathology of Special Interest to Dentists." By J. J. Sarrazin, New Orleans, La.

"Studies of the Variations in Susceptibility to the (so-called) Rheumatic Group Lesions and to the Influence of Oral Focal Infections." By Weston A. Price, Cleveland, Ohio.

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**Program of the Section on Prosthetic Dentistry and Crown and Bridge Work***Special Announcement*

Owing to the fact that only two half day sessions can be given to this Section, it has been deemed best to dispense with long exhaustive general papers and discussions, as more definite information can be given by selecting men to cover as many of the vital phases of this branch of dentistry as possible, with a view to standardizing technical procedure. The audience will thus individually have the opportunity of either accepting or rejecting the teachings of the essayists.

In addition to the papers and illustrations, the essayists will give individual clinics in order that those who desire to meet and discuss details further with the clinicians may have this opportunity.

**FIRST SESSION***Prosthodontia*

"Scientific Interpretation of Muscular Control of Mandibular Movements." By George H. Wilson, Cleveland, O.

Syn.—The dental profession and anatomists generally are not clear on this subject. Dr. Wilson has been doing research work along this line for some years, and is now ready to present his findings to the profession. Owing to the importance of this subject in its relation to denture construction we are fortunate to have it presented to us by a man of Dr. Wilson's ability and experience.

"Surgical Interference for Preparation of Malformed Edentulous Mouths for Construction of Dentures." By James P. Ruyl, New York City.

Syn.—Demonstrates technic, using motion pictures for removing protruding gum tissue, irregular alveolar process, and other deformities in order to simplify complicated cases by providing a firm foundation upon which to build artificial dentures that will be more efficient and more beautiful.

*Crown and Bridge Technic*

"Construction of Cast Clasps for Partial Dentures and General Consideration of Other Methods of Retention and Attachment of Vital Teeth for Removable Bridge Work." By Louis J. Weinstein, New York City.

Syn.—Mr. Weinstein's knowledge of the uses and abuses of metals used in dentistry, combined with his technical experience enables him to present us with definite information on a subject of vital importance at this time.

"Porcelain Jacket Crown Technic." By A. L. Legro, Detroit, Mich.

Syn.—Demonstrates a definite technic for making this most esthetic, as well as most valuable prosthetic restoration for the conservation of the dental pulp comparatively simple.

## SECOND SESSION

*Prosthodontia*

"Selection of Artificial Teeth for Prosthetic Restorations." By P. C. Lowery, Detroit, Mich.

Syn.—Clearly demonstrates one of the most important phases of dentistry which a large majority of dentists do not seem to appreciate as much as they should. The doctor shows that it is much simpler to harmonize tooth and face form than it is to adapt the face of your patients to your ideal tooth form.

"Correction of Malocclusion in Artificial Dentures." By M. M. House, Indianapolis, Ind.

Syn.—Demonstrates with precision the highest type of efficiency in artificial dentures.

"Mandibular Movements and the Forms of Artificial Bicuspid and Molars Necessitated Thereby." By Prof. Alfred Gysi, Zurich, Switzerland.

"A Study of the Temporo-Mandibular Joint; with special reference to Lateral Movements of the Jaw in relation to the Occlusion and Articulation of the Teeth." By J. Leon Williams, New York City.

*Crown and Bridge Technic*

"The Gold Shoulder Crown Technic." By Wm. H. Elliott, Detroit, Mich.

Syn.—This technic of the most widely used restoration in dentistry is definite, accurate, and simple.

"Attachments for Vital Teeth in Fixed Bridge Work." By Forrest H. Orton, St. Paul, Minn.

(Dr. Orton's reputation as a technician and teacher of teachable technic is so great that no dentist can afford to miss an opportunity to hear him lecture.)

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**Program of the Section on Oral Surgery, Exodontia and Anesthesia**

## FIRST SESSION

Symposium: "Apicoectomy: Its Indications and Contra-indications and Root-Canal Technic." (Illustrated with stereopticon slides.) By Thomas B. Hartzell, Minneapolis, Minn.

"Surgical Technic of Apicoectomy." (Illustrated with stereopticon slides.) By Chalmers J. Lyons, Ann Arbor, Mich.

Discussed by—Thomas P. Hinman, Atlanta, Ga. William L. Shearer, Omaha, Nebr. Carl D. Lucas, Indianapolis, Ind. Clarence J. Grieves, Baltimore, Md. H. A. Maves, Minneapolis, Minn.

"Nitrous Oxid-Oxygen Anesthesia in Oral Surgery and Dentistry." By J. A. Heidbrink, Minneapolis, Minn.

Discussed by Wm. H. Deford, Des Moines, Iowa. John W. Seybold, Denver, Colo. Boyd S. Gardner, Rochester, Minn.

"Tic doloureux—Etiology—Diagnosis—Treatment—Palliative—Blocking and Surgical." By Rudolph Matas (M. D.), New Orleans, La.

Discussed by—Herbert A. Potts, Chicago, Ill.

#### SECOND SESSION

"Impacted Lower Third Molar." (Illustrated.) By George B. Winter, St. Louis, Mo.

Discussed by—J. P. Henahan, Cleveland, O. Harry W. Allen, Kansas City, Mo. O. T. Dean, Seattle, Wash. Roy S. Hopkinson, Milwaukee, Wis.

Symposium: "Block Anesthesia." "Preparation of Solution." By E. A. Litchfield, Humboldt, Nebr.

"Pharmacology of Various Local Anesthetics." By Samuel L. Silverman, Atlanta, Ga.  
"Indications and Contra-Indications." By Fred F. Molt, Chicago, Ill.

"Technic of Blocking." (Most Important Injections.) By . . . . .

"Suggestive Therapy and Treatment of Abnormal Conditions During and Following Injections." By P. G. Puterbaugh, Chicago, Ill.

"Diseases of the Antrum." (Illustrated with stereopticon slides.) By Charles H. Oakman, Detroit, Mich.

Discussed by—R. Boyd Bogle, Nashville, Tenn. Truman W. Brophy, Chicago, Ill.

